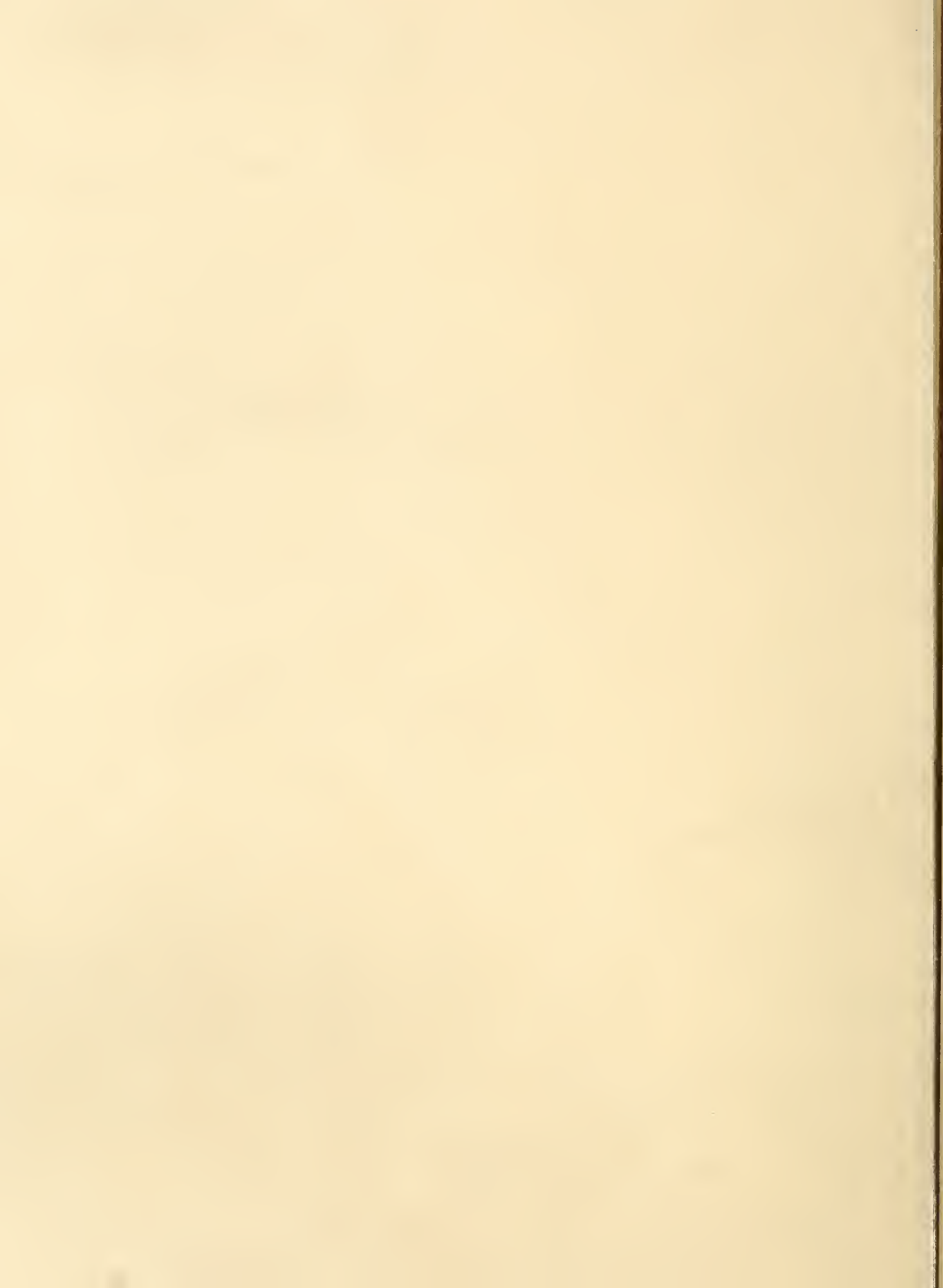


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X 1968 REPORT OF

EGG PRODUCTION TESTS, UNITED STATES AND CANADA

- RANDOM SAMPLE EGG PRODUCTION TESTS

TWO-YEAR COMBINED SUMMARY, 1966-67 AND 1967-68

PROCEDURES FOR COMPUTING COMBINED SUMMARY

RANGE GROUP RANKINGS, 1967-68

SUPERVISORS, ENTRANTS, AND MANAGEMENT, 1967-68



Egg production tests are designed to provide poultrymen, hatcherymen, and breeders with a reliable guide to the performance of poultry stocks offered for sale. This publication contains information on many egg production traits that are of economic importance to the trade. The data were compiled from the records of official Random Sample Egg Production Tests conducted in the United States and Canada. The data resulting from these tests have been analyzed statistically by Biometrical Services of USDA's Agricultural Research Service, Beltsville, Md.

The publication of this report is based on recommendations of the National Committee on Random Sample Poultry Testing and those of the Council of American Official Poultry Tests. Information in this report was compiled by the Poultry Research Branch, Animal Husbandry Research Division, Agricultural Research Service from data furnished by Test Supervisors.

The publication of this report does not imply approval or endorsement by the U.S. Department of Agriculture of any of the stocks mentioned.

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Readers who require information on the performance of chicken stock in a Chicken Meat Production Test are requested to write to: Arkansas Meat Performance Egg Phase and Reproduction Test, Department of Animal Husbandry and Veterinary Science, University of Arkansas, Fayetteville, Ark. 72702

This report is divided into four sections:

- 1, A 2-year combined summary of the data obtained in the 1966-67 and 1967-68 Random Sample Egg Production Tests. These data were treated by acceptable statistical procedures that allow the reader to compare directly the stock entered in the various egg production tests in the United States and Canada.
- 2, An explanation of statistical procedures that were used in computing the regressed means and confidence limits of egg production traits evaluated in the 2-year combined summary.
- 3, A range group ranking for stock that was entered in 1967-68 Random Sample Egg Production Tests. The ranking shows the performance of each stock by traits compared with that of other stock in the same test.
- 4, List of stocks entered in 1967-68 tests, management conditions at the tests for 1967-68, and name and address of the Random Sample Egg Production Test Supervisors.

TWO-YEAR COMBINED SUMMARY FOR TEST YEARS 1966-67 and 1967-68

Entries in the various tests start with a random sample of hatching eggs or chicks of the stock to be tested. Samples are drawn according to prescribed methods to ensure that each entry is typical of the stock it represents. All entries within a test are treated alike with respect to housing, feeding, management, and disease control in order to avoid differences in performance that would be due to environment.

All tests are conducted according to these basic principles. However, even the most carefully designed and conducted tests are influenced by errors of two kinds. The first kind of error is the chance deviation or unavoidable "sampling error" made when a small sample of eggs or chicks represents an entry. The other kind of error is due to uncontrolled or unknown environmental differences between entries that occur in spite of all efforts to treat all entries within a given test as nearly alike as possible. The differences between the results for two entries in a single test for a single year may be due to these chance variations rather than to a real difference in the performance capabilities of the two stocks. The effect of such errors in comparing stocks can be materially reduced by basing comparisons on the combined results of several tests over 2 or more years. If all entries compared were entered in the same tests in both years, the simple averages could be compared directly without adjustment.

However, differences among tests and between years, and those caused by climatic conditions and other environmental factors affect the results, and as a consequence, a direct comparison of the test results of two stocks in different tests or in different years, may be misleading. Therefore, to present test results in a manner that will allow sound evaluation of all stocks tested, the results were combined, by stocks and by years, and were adjusted by accepted statistical procedures for test and year differences and for variation in amount of information per stock. The results of these computations are published as the "regressed mean" for each trait for each stock that was tested (table 1).

The performance data (regressed means) reported in this summary are derived from the results reported by the individual tests for each of the past 2 years. It is unlikely, however, that the means for any stock, even though entered in only 1 test each year, will coincide precisely with the 2-year average performance data as published by the test. The variations are due to adjustments for test differences, year difference, the number of tests and of years entered, and the number of replicates per test. These statistical adjustments allow predictions of what the average performance would have been for each stock had all stocks been entered in all tests each year.

The statistical treatment applied to the test data is designed to reduce the influence of nongenetic variations. This cannot be accomplished perfectly, and consequently, estimates or predictions of performance cannot be made with absolute precision. However, reliable predictions, within prescribed limitations, can be made as to whether a difference in the reported performance of two stocks represents a real difference in their performance. These predictions involve the use of the confidence interval values that have been computed for each trait or performance factor reported. This is explained in the paragraphs that follow.

How To Tell If Differences Among Stocks Are Real

The following example illustrates the compilation of the 2-year combined summary. This and the related explanation will help the reader to use and interpret the data in table 1.

(Illustration of regressed means and 80-percent confidence limits
as they might appear for a few traits)

STOCK CODE	FEED PER POUND OF EGGS PRODUCED		EGG WEIGHT		LARGE AND EXTRA LARGE EGGS		ALBUMEN QUALITY		BLOOD SPOTS			
	(pounds)		(oz./doz.)		(percent)		(Haugh units)		1/8 INCH OR MORE		LESS THAN 1/8 INCH	
	RE- GRESSED MEAN	80%* CONF. LIMITS	RE- GRESSED MEAN	80%* CONF. LIMITS	RE- GRESSED MEAN	80%* CONF. LIMITS	RE- GRESSED MEAN	80%* CONF. LIMITS	RE- GRESSED MEAN	80%* CONF. LIMITS	RE- GRESSED MEAN	80%* CONF. LIMITS
1	2.77	2.69 2.85	24.8	24.5 25.1	66.7	64.0 69.4	77.9	77.1 78.7	1.5	1.1 1.8	3.5	2.9 4.1
2	3.37	3.30 3.44	23.9	23.6 24.2	52.8	50.3 55.3	80.9	80.1 81.7	2.5	2.1 3.1	3.6	3.0 4.2
3	2.88	2.82 2.94	25.2	24.9 25.5	71.3	69.5 73.3	74.1	73.3 74.9	.7	.5 1.0	1.0	.8 1.3
4	2.79	2.71 2.79	25.1	24.8 25.4	71.9	70.2 73.6	76.6	75.5 77.7	2.0	1.7 2.4	3.7	3.1 4.4
5	2.90	2.84 2.96	25.6	25.3 25.9	75.7	73.5 77.9	83.0	82.3 83.7	1.1	.8 1.4	1.7	1.3 2.2

*If the confidence limits for two regressed means overlap, the two means are not significantly different at the 5% level.

The range of the confidence limits represents the amount of difference in the performance of two stocks that may be due to chance. If the confidence limits for two regressed means overlap, the two means are not significantly different at the 5-percent level of probability. If the confidence limits for two regressed means do not overlap, the odds are at least 19 in 20 that a real difference exists in the performance of the two stocks.

The use of the above data as a means of evaluating different stocks and traits can be illustrated as follows:

For the trait "Feed per Pound of Eggs Produced" the confidence limits for Stock 1 (2.69 to 2.85) do not overlap the confidence limits of Stock 2 (3.30 to 3.44). Therefore, the regressed means of these two stocks (2.77 and 3.37 pounds of feed, respectively) are significantly different at the 5-percent level for this trait. However, when comparing Stock 1 with Stocks 3, 4, and 5, we find that the confidence limits of this stock (2.69 to 2.88) overlap the confidence limits of each of the other three stocks (2.82 to 2.94, 2.71 to 2.79, and 2.84 to 2.96, respectively). Thus, the regressed mean of Stock 1 is not significantly different from the regressed means of Stocks 3, 4, and 5 for this trait.

Another example can be shown by using the trait "Albumen Quality." The confidence limits of Stock 1 (77.1 to 78.7) overlap the confidence limits of Stock 4 (75.5 to 77.7). Therefore, there is no significant difference in the albumen quality of these two stocks, even though the regressed mean of Stock 1 is 77.9 Haugh Units and Stock 4 is 76.6 Haugh Units. When Stock 1 is compared with Stocks 2 and 5, we see that the confidence limits of these two stocks do not overlap those of Stock 1. Thus, these two stocks have a significantly higher albumen quality (80.9 and 83.0 Haugh Units, respectively) than the 77.9 Haugh Units of Stock 1. In comparing Stock 1 with Stock 3, the confidence limits do not overlap. In this case, the albumen quality of Stock 3, expressed as a regressed mean of 74.1 Haugh Units, is significantly lower than the regressed mean of Stock 1.

The range of the confidence limits will not necessarily be the same for two different stocks that have the same regressed mean. The number of locations in which a stock is entered, the number of replicate pens per location, the number of years entered, and the accuracy involved in adjusting for location and year effects all have a bearing on the range of the confidence limits for each individual regressed mean.

Explanation of Income Figures

The "Income Over Feed and Chick Cost" figures reported in table 1 represent the sales value of the eggs produced and of the hens at the end of the test minus the cost of the chicks and the feed used during the growing and laying periods. These figures may be useful in comparing the overall performance of stocks, but they should not be considered as predictions of "profit" to be obtained under commercial operations. The "income" figures should be reduced by other costs, such as labor, building and equipment depreciation, vaccination, litter, interest, taxes, and insurance, to approximate profits that might be expected under commercial conditions. Surveys conducted among commercial producers indicate that such other costs may range from \$1 to \$2 per pullet housed.

Although the average chick price is reported for each stock, this value cannot be appropriately used to convert the "Income Over Feed and Chick Cost" figure to an income over feed cost figure. The average chick price shown is a simple unadjusted average of the prices reported by the entrant for his entries in the various tests and is not directly comparable to chick cost included in "Income Over Feed and Chick Cost."

Stocks Should Be Compared for All Traits

All traits should be considered when using this report to evaluate the overall performance of the various stocks. The values reported for "Income Over Feed and Chick Cost" represent a composite of several traits, combined as determined by the economic conditions of the areas in which the tests are located. The conditions under which the stock is expected to perform in commercial production may differ from those prevailing at the tests, and such differences should be taken into consideration. For example, a poultryman whose local market pays unusually good premiums for large and extra large eggs should place more emphasis on egg size in his evaluation of stock than poultrymen located in areas where such premiums are not available. The local market preference for brown or white shells should also be taken into account. Traits related to interior egg quality that affect the grade are of greatest importance in areas where prices are based on quality standards.

Each person should study his local needs and conditions and then place appropriate emphasis on the performance traits that are of greatest importance to his situation. A productive and profitable stock for one poultryman under one set of conditions may not fit the needs of another poultryman under a different set of conditions.

A brief explanation of the statistical procedures used in computing the regressed means, confidence limits, and performance index is provided in the section entitled "Procedures Used for Computing Combined Summary Values."

Definitions of Terms Used and Abbreviations

Stock: A term used to identify a specific breeding combination of chickens. These breeding combinations may include pure strains, strain crosses, breed crosses, incrossbreds, or combinations thereof. Kinds of stock and breeding methods are—

BPR	Barred Plymouth Rock	RIW	Rhode Island White	INX	Incrossbred
CG	California Gray	WL	White Leghorn	PS	Pure Strain
LS	Light Sussex	WPR	White Plymouth Rock	SX	Strain Cross
NH	New Hampshire	BX	Crossbred	Syn.	Synthetic
RIR	Rhode Island Red	IN	Incross		

Tests:	Arizona (Ariz.)	New Brunswick (N. B.)
	British Columbia (B. C.)	New Hampshire (N. H.)
	Central Canada (C. C.)	New Jersey (N. J.)
	Florida (Fla.)	North Carolina (N. C.)
	Minnesota (Minn.)	Pennsylvania (Pa.)
	Missouri Cage (Mo. -C.)	Tennessee (Tenn.)
	Missouri Floor (Mo. -F.)	Texas (Texas)

Test Year: A period beginning during the first year stated in a double-year designation and ending approximately 500 days later. See management summary shown in table 7.

Definition of Traits

Growing mortality	Percentage of birds that died on or before the time they were 150 days old or subsequent age at housing.																
Laying mortality	Percentage of birds that died after they were 150 days old or subsequent age at housing.																
Body weight	Average weight of birds alive at end of test.																
Age at 50 percent production.	Days of age computed from the first day of the first 2 consecutive days of 50 percent production for living birds in the entry at that time.																
Hen-housed egg production.	Number of eggs laid per pullet housed computed from time of housing to the end of the test.																
Hen-day egg production.	Percent hen-day production from the time birds reached 50 percent production to end of test.																
Feed per pound of eggs.	Pounds of feed per pound of eggs produced, computed from bulk weighing of the eggs at least 1 day every 2 weeks or 2 days a month at equal intervals during the laying period of the test.																
Egg weight	The weight of a dozen eggs computed from bulk weighing of the eggs at least 1 day every 2 weeks or 2 days a month during the laying period of the test.																
Large and extra large eggs.	Percentage of large and extra large eggs as determined by egg-size distribution computed from all eggs laid 1 day each week.																
Albumen quality	Haugh units, computed from egg weight and albumen height of broken-out egg measured on 1 day's eggs per quarter, at equal intervals. The greater the Haugh units the higher the albumen quality.																
Large blood spots	Percentage of eggs with one or more large blood spots (1/8 inch or more in diameter), computed from at least 3 days' eggs per quarter, broken-out basis.																
Small blood spots	Percentage of eggs with one or more small blood spots (less than 1/8 inch in diameter), computed from at least 3 days' eggs per quarter, broken-out basis.																
Large meat spots	Percentage of eggs with one or more colored large meat spots (1/8 inch or more in diameter), computed from at least 3 days' eggs per quarter, broken-out basis.																
Small meat spots	Percentage of eggs with one or more colored small meat spots (less than 1/8 inch in diameter), computed from at least 3 days' eggs per quarter, broken-out basis.																
Specific gravity score.	Eggs are given the specific gravity score that corresponds with the specific gravity of the solution in which they will float. Eggs that do not float in 1.100 solution are given a nine score. The specific gravity of an egg is closely correlated with shell thickness; therefore, the higher the specific gravity score, the thicker the shell. Tabulation of specific gravity solutions and the corresponding specific gravity scores follow: <table><tr><td><u>Specific gravity</u></td><td><u>Specific gravity</u></td></tr><tr><td>Solution</td><td>Solution</td></tr><tr><td>Score</td><td>Score</td></tr><tr><td>1.068 --- 0</td><td>1.088 --- 5</td></tr><tr><td>1.072 --- 1</td><td>1.092 --- 6</td></tr><tr><td>1.076 --- 2</td><td>1.096 --- 7</td></tr><tr><td>1.080 --- 3</td><td>1.100 --- 8</td></tr><tr><td>1.084 --- 4</td><td></td></tr></table>	<u>Specific gravity</u>	<u>Specific gravity</u>	Solution	Solution	Score	Score	1.068 --- 0	1.088 --- 5	1.072 --- 1	1.092 --- 6	1.076 --- 2	1.096 --- 7	1.080 --- 3	1.100 --- 8	1.084 --- 4	
<u>Specific gravity</u>	<u>Specific gravity</u>																
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1.068 --- 0	1.088 --- 5																
1.072 --- 1	1.092 --- 6																
1.076 --- 2	1.096 --- 7																
1.080 --- 3	1.100 --- 8																
1.084 --- 4																	
Income over feed and chick cost.	Income over feed and chick cost per pullet housed, with chick cost in 1,000 lots at hatch date adjusted for mortality (accidental deaths, sexing errors, and missing chicks not included).																

Table 1.--Two-year combined summary: Regressed means and 80% confidence limits for traits by stocks entered

Stock Code	Breeder's Name and Address	Stock		No. Pens	Avg. Chick Price (Cents)	Mortality				Body Weight (pounds)		Age at 50% Production (days)		Egg Production			
		Breeding	Strain or Tradename			No. Loca- tions	Growing (percent)	Laying (percent)		RE- GRESSED MEAN	80% CONF. LIMITS	RE- GRESSED MEAN	80% CONF. LIMITS	RE- GRESSED MEAN	80% CONF. LIMITS	HEN HOUSED (number)	HEN DAY (percent)
								RE- GRESSED MEAN	80% CONF. LIMITS								
602	Andrews, J. J. Chilliwick, B. C., Canada	WL SX	Andrews B 31 ----	10 5	34.0	3.7 2.9	16.1 14.4	17.9	4.5 4.3	4.7	172 169	175	211 203	219	67.8 65.3	69.3	
570	Animal Research Institute Ottawa, Ontario, Canada	WL PS	Kentville R. B. C. ---	18 8	37.0	4.1 3.4	13.6 12.0	15.3	4.4 4.2	4.6	175 172	178	209 202	216	65.8 64.4	67.2	
10	Anthony, Geo. M. & Sons Strasstown, Pa. 19559	WL SX	Anthony-----	25 8	36.8	3.3 2.6	16.0 14.3	17.8	4.5 4.3	4.7	176 174	178	213 207	219	68.9 67.6	70.2	
307	Babcock Poultry Farm, Inc. Ithaca, N. Y. 14851	WL SX	Babcock B-300 ----	82 28	36.8	3.7 2.9	12.6 11.2	14.1	4.4 4.2	4.6	166 164	168	234 229	239	72.5 71.4	73.6	
376	Babcock Poultry Farm, Inc. Ithaca, N. Y. 14851	WL SX	Babcock B-310 ----	8 5	36.0	3.7 3.0	12.6 11.1	14.3	4.0 3.8	4.2	175 172	178	214 206	222	66.4 64.8	68.0	
377	Babcock Poultry Farm, Inc. Ithaca, N. Y. 14851	RIRxBPR BX	Babcock B-390 ----	20 8	36.0	3.5 2.8	12.5 10.9	14.1	6.0 5.8	6.2	175 172	178	214 207	221	66.7 65.3	68.1	
230	Brender's Leghorns Ferndale, N. Y. 12734	WL SX	Money Maker-----	12 6	30.0	3.9 3.1	14.5 12.8	16.3	4.5 4.2	4.8	178 175	181	208 200	216	66.3 64.9	67.7	
361	Burling Hatchery Oxford, Pa. 19363	RIRxWPR BX	Golden Tri-Cross--	2 1	32.0	4.3 3.7	14.5 13.2	15.9	5.4 5.1	5.7	174 170	178	215 207	223	68.0 66.1	69.9	
283	Cameron Leghorn Res. Farm Beaver Springs, Pa. 17812	WL SX	Cameron #924-----	13 4	32.0	4.0 3.2	14.2 12.5	15.9	4.7 4.5	4.9	177 174	180	219 211	227	69.6 68.1	71.1	
397	Carey Farms Marion, Ohio 43305	CGxWL BX	Carey New Spots----	7 4	32.0	4.0 3.3	12.2 10.9	15.4	4.8 4.6	5.0	177 173	181	221 213	229	69.6 68.0	71.2	
304	Cashman Leghorn Farms Webster, Ky. 40176	SynxWL INX	Cashman Astronauts	18 5	32.5	3.5 2.8	16.0 14.3	17.8	5.1 4.9	5.3	178 175	181	211 204	218	69.6 68.2	71.0	
31	Cashman Leghorn Farms Webster, Ky. 40176	WL IN	Cashman Hi-Cash--	47 17	32.4	3.9 3.1	14.3 12.7	15.9	4.7 4.5	4.9	180 177	183	218 212	224	70.5 69.3	71.7	
508	Clark's Poultry Farm Brandon, Man., Canada	RIR (LSx RIR) BX	Paymaster 101 ----	2 1	31.0	4.2 3.7	14.6 13.4	15.9	5.9 5.6	6.2	172 168	176	211 203	219	66.1 64.2	68.0	
289	Colonial Poultry Farms Pleasant Hill, Mo. 64080	WL IN	True-Line 365-B --	53 15	36.2	3.5 2.8	14.3 12.7	15.9	4.3 4.1	4.5	168 165	171	221 215	227	69.6 68.4	70.8	
392	Colonial Poultry Farms Pleasant Hill, Mo. 64080	--- INX	True-Line 365-H --	15 6	37.0	3.5 2.9	12.0 10.4	15.3	4.0 3.7	4.6	172 175	178	217 211	224	68.6 67.1	70.1	
309	Davis, Joe K., Hatchery Earl, N. C. 28038	RIRxBPR BX	Davis Combiner	32 8	34.0	3.7 2.9	9.0 7.7	10.4	6.1 5.9	6.3	175 172	178	217 211	223	65.4 64.1	66.7	

STOCK CODE	FEED PER POUND OF EGGS PRODUCED (pounds)			EGG WEIGHT (oz./doz.)			LARGE AND EXTRA LARGE EGGS (percent)			ALBUMEN QUALITY (Haugh units)			BLOOD SPOTS						MEAT SPOTS						SPECIFIC GRAVITY SCORE			INCOME OVER FEED AND CHICK COST (dollars)			STOCK CODE				
	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS								
	2.69	2.77	2.85	24.6	24.9	25.2	65.6	70.4	75.3	76.2	77.1	0.9	1.1	1.3	1.8	2.2	1.4	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.86	2.03	2.20	602
570	2.92	2.99	3.06	24.5	24.8	25.1	62.8	67.0	75.0	75.8	76.6	1.3	1.5	1.8	2.2	2.7	1.8	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.50	1.66	1.82	570
10	2.79	2.86	2.93	25.0	25.3	25.6	70.9	74.7	79.5	80.3	81.1	1.0	1.2	1.4	1.1	1.5	0.8	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.86	2.00	2.14	10
307	2.61	2.66	2.71	25.1	25.3	25.5	71.4	74.6	75.2	75.8	76.4	1.1	1.4	1.6	1.8	2.2	1.5	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.35	2.46	2.57	307
376	2.71	2.79	2.87	25.2	25.6	26.0	71.5	76.1	76.5	77.4	78.3	1.0	1.2	1.4	1.2	1.6	0.9	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.88	2.05	2.22	376
377	3.07	3.14	3.21	25.9	26.2	26.5	77.7	81.7	75.3	76.0	76.7	1.1	1.3	1.6	3.3	3.8	2.7	5.9	7.9	7.9	17.2	18.8	3.27	3.53	3.40	3.27	3.40	3.27	1.66	1.81	1.96	377			
230	2.90	2.97	3.04	24.9	25.2	25.5	72.4	76.6	76.9	77.8	78.7	0.8	1.0	1.2	1.5	1.9	1.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.78	1.93	2.08	230
361	2.90	3.01	3.12	25.1	25.6	26.1	72.6	79.0	76.9	78.3	79.7	1.0	1.2	1.3	2.5	2.9	2.1	1.0	3.2	3.2	10.2	13.5	7.4	3.33	3.57	3.81	3.57	3.81	1.76	1.96	2.16	361			
283	2.87	2.95	3.03	25.1	25.4	25.7	73.0	77.4	77.0	77.9	78.8	0.9	1.1	1.3	1.8	2.2	1.4	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.87	2.04	2.21	283
397	2.75	2.84	2.93	24.8	25.1	25.4	69.5	74.5	72.8	73.8	74.8	0.9	1.0	1.2	1.4	1.9	1.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.96	2.14	2.32	397
304	2.79	2.86	2.93	25.4	25.7	26.0	73.5	77.9	74.2	75.1	76.0	0.9	1.1	1.3	1.9	2.4	1.5	0.0	0.0	0.3	0.4	0.8	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.73	1.90	2.07	304
31	2.82	2.88	2.94	25.0	25.3	25.6	71.9	75.5	76.6	77.2	77.8	1.2	1.4	1.7	1.9	2.3	1.6	0.0	0.0	0.2	0.3	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.89	2.01	2.13	31
508	3.00	3.12	3.24	24.5	24.9	25.3	64.6	71.0	75.1	76.5	77.9	0.9	1.0	1.1	2.0	2.4	1.7	2.0	4.9	4.9	12.9	16.5	9.7	3.49	3.73	3.97	3.49	3.73	1.63	1.83	2.03	508			
289	2.73	2.79	2.85	24.6	24.8	25.0	66.1	69.7	77.0	77.6	78.2	1.0	1.3	1.5	1.8	2.2	1.5	0.0	0.0	0.2	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.99	2.12	2.25	289
392	2.75	2.83	2.91	24.8	25.1	25.4	68.5	72.9	76.6	77.5	78.4	0.8	1.0	1.2	1.6	2.0	1.2	0.0	0.0	0.1	0.3	0.6	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.89	2.06	2.23	392
309	3.08	3.14	3.20	26.2	26.4	26.6	77.5	81.3	75.5	76.2	76.9	0.8	1.0	1.2	2.2	2.6	1.7	5.1	6.9	6.9	21.7	23.4	20.1	3.02	3.14	3.26	3.02	3.14	1.66	1.80	1.94	309			

*If the confidence limits for two regressed means overlap, the two means are not significantly different at the 5% level.

Table 1.--Two-year combined summary: Regressed means and 80% confidence limits for traits by stocks entered (Continued)

STOCK CODE	BREEDER'S NAME AND ADDRESS	STOCK		NO. PENS	AVG. CHICK PRICE (Cents)	MORTALITY				BODY WEIGHT (pounds)		AGE AT 50% PRODUCTION (days)		EGG PRODUCTION		
		BREEDING	STRAIN OR TRADE NAME			GROWING (percent)		LAYING (percent)		RE- GRESSED MEAN		RE- GRESSED MEAN		HEN HOUSED (number)	HEN DAY (percent)	
						RE- GRESSED MEAN	80% CONF. LIMITS	RE- GRESSED MEAN	80% CONF. LIMITS	RE- GRESSED MEAN	80% CONF. LIMITS	RE- GRESSED MEAN	80% CONF. LIMITS			
399	Davis, Joe K., Hatchery Earl, N. C. 28038	RIR SX	Davis Red -----	18 8	34.0	3.8 3.1	4.6 4.6	9.8 8.4	11.3 5.5	5.7 5.9	180 177	183	218 211	225	66.7 65.2	68.2
371	Demler Farms, Inc. Anaheim, Calif. 92805	WL SX	Demler D-65 -----	37 13	30.0	4.7 3.9	5.6 5.6	13.8 12.3	15.5 4.1	4.3 4.5	176 173	179	211 205	217	66.6 65.4	67.8
514	deZeeuw Leghorn Breeder S. Edmonton, Alta., Can.	WL SX	deZeeuw 752 -----	10 5	36.0	4.1 3.4	4.9 4.9	14.1 12.5	15.8 4.6	4.8 5.0	182 179	185	203 195	211	66.7 65.3	68.3
402	Erath Egg Farm Stephenville, Texas 76401	WL SX	Erath Chicana -----	2 1	30.0	4.5 3.9	5.1 5.1	14.2 13.0	15.5 3.8	4.1 4.4	177 174	180	206 198	214	65.2 63.3	67.1
604	Fisher Poultry Farm, Ltd. Ayrton, Ontario, Canada	WL SX	Fisher 105 -----	6 3	35.0	3.1 2.5	3.7 3.7	14.5 12.9	16.1 4.0	4.3 4.6	168 164	172	220 212	228	69.8 67.1	70.5
66	Garber Poultry Br. Farm Modesto, Calif. 95351	WL SX	Garber G 200 -----	41 13	33.4	3.6 2.9	4.4 4.4	14.3 12.7	15.9 4.3	4.5 4.7	174 178	178	214 208	220	69.6 67.4	69.8
65	Garber Poultry Br. Farm Modesto, Calif. 95351	CG x WL BX	Garber G x 291 -----	33 8	31.3	3.6 2.8	4.4 4.4	15.2 13.5	16.9 4.8	5.0 5.2	168 165	171	220 213	227	69.2 68.0	70.4
69	Garrison, Earl W. Bridgeton, N. J. 08302	RIR x WPR BX	Golden Sex Link -----	8 4	33.5	4.3 3.5	5.2 5.2	14.7 13.0	16.4 4.8	6.7 7.0	173 170	176	208 201	215	65.7 64.1	67.3
338	Ghostley's Poultry Farm, Inc. Anoka, Minn. 55303	WL SX	Ghostley Pearl 63 -----	25 11	38.0	3.8 3.0	4.6 4.6	16.2 14.5	19.0 4.2	4.4 4.6	169 166	172	220 213	227	70.4 69.2	71.6
373	Ghostley's Poultry Farm, Inc. Anoka, Minn. 55303	WL SX	Ghostley Cage Queen	2 1	34.0	4.0 3.4	4.7 4.7	14.0 15.3	16.6 4.9	4.6 4.9	165 169	173	212 220	228	68.3 70.2	72.1
80	Hansen's Leghorn City Puyallup, Wash. 98371	WL SX	Criss Cross H 25 -----	9 3	40.0	4.0 3.2	4.8 4.8	15.3 13.6	17.0 4.5	4.7 4.9	178 175	181	205 198	212	66.4 64.8	68.0
225	Harco Orchards & Pity Farm South Easton, Mass. 02375	RIR x BPR BX	Harco Sex Link -----	20 8	35.0	3.4 2.7	4.2 4.2	12.2 13.8	15.5 6.1	6.3 6.3	172 175	178	212 219	226	67.9 69.2	70.5
86	Hardy, C. Nelson & Sons Essex, Mass. 01929	RIR x BPR BX	Deluxe Sex Link -----	6 3	32.0	2.7 2.1	3.4 3.4	13.5 12.0	15.2 5.8	6.1 6.4	178 174	182	204 196	212	63.8 62.2	65.4
88	Heisdorf & Nelson Farms Redmond, Wash. 98052	WL SX	H & N Nick Chick -----	35 8	32.5	3.5 2.7	4.3 4.3	13.2 11.7	14.9 4.1	4.3 4.5	171 174	177	213 219	225	69.4 68.1	70.7
92	Honegger Breeder Hatchery Forrest, Ill. 61741	WL SX	Honegger Layer -----	65 22	39.2	3.6 2.8	4.4 4.4	14.7 13.2	16.3 4.3	4.5 4.7	170 173	176	211 217	223	68.5 69.6	70.7
378	Hubbard Farms, Inc. Walpole, N. H. 03608	Syn x NH BX	Golden Comet	24 7	35.0	3.1 2.4	3.9 3.9	13.1 11.5	14.7 5.2	5.4 5.6	170 167	173	216 210	222	65.9 64.5	67.3

STOCK CODE	FEED PER POUND OF EGGS PRODUCED (pounds)			EGG WEIGHT (oz./doz.)			LARGE AND EXTRA LARGE EGGS (percent)			ALBUMEN QUALITY (Haugh units)			BLOOD SPOTS						MEAT SPOTS						SPECIFIC GRAVITY SCORE			INCOME OVER FEED AND CHICK COST (dollars)			STOCK CODE
	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	1/8 INCH OR MORE (percent)	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	LESS THAN 1/8 INCH (percent)	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	1/8 INCH OR MORE (percent)	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS				
399	3.07	3.14	25.8	77.3	76.4	1.0	2.3	2.8	3.3	6.0	7.1	12.9	14.5	3.19	3.34	1.87	2.03	1.71	399												
371	2.88	2.94	25.1	71.1	77.1	0.7	0.9	1.2	1.5	0.1	0.2	0.3	0.5	4.11	4.23	1.99	2.12	1.86	371												
514	2.91	3.07	24.7	67.6	75.2	1.1	1.6	2.0	2.5	0.1	0.4	0.2	0.5	4.08	4.24	1.71	1.89	1.53	514												
402	2.78	3.00	25.0	71.3	76.8	1.0	1.3	1.6	2.0	0.1	0.5	0.2	0.9	4.25	4.49	1.93	2.12	1.74	402												
604	2.61	2.70	25.4	72.4	80.6	0.9	0.7	1.2	1.5	0.1	0.5	0.5	1.1	4.29	4.48	2.27	2.45	2.09	604												
66	2.85	2.90	25.1	73.2	80.2	0.7	0.8	1.1	1.4	0.0	0.2	0.2	0.4	4.44	4.56	2.07	2.20	1.94	66												
65	2.74	2.86	25.3	71.3	76.0	0.6	0.9	1.2	1.6	0.1	0.2	0.3	0.5	3.82	3.94	2.10	2.24	1.96	65												
69	3.23	3.31	26.1	80.1	77.2	0.9	2.5	3.0	3.6	5.5	6.7	18.3	20.5	4.27	4.44	1.72	1.89	1.55	69												
338	2.77	2.83	25.3	73.0	79.4	0.7	0.8	1.1	1.4	0.0	0.1	0.3	0.5	3.65	3.77	2.09	2.22	1.96	338												
373	2.77	2.99	24.8	69.5	78.6	0.9	1.4	1.8	2.1	0.4	1.1	0.8	2.0	3.92	4.15	2.07	2.26	1.88	373												
80	2.86	3.04	25.1	72.0	77.0	1.0	1.0	1.4	1.7	0.1	0.4	0.4	0.9	4.44	4.61	1.83	2.01	1.65	80												
225	2.92	3.06	27.0	85.2	77.9	1.1	2.7	3.3	3.8	6.7	7.7	18.8	20.5	3.07	3.20	2.05	2.20	1.90	225												
86	3.15	3.33	26.0	79.8	75.6	1.1	2.6	3.2	3.8	5.5	6.8	13.0	15.3	3.68	3.86	1.68	1.87	1.49	86												
88	2.75	2.87	24.9	70.9	80.1	0.9	1.1	1.4	1.8	0.1	0.2	0.2	0.4	4.01	4.13	2.18	2.32	2.04	88												
92	2.84	2.89	25.1	70.4	76.9	1.1	1.4	1.7	2.1	0.0	0.1	0.1	0.2	4.16	4.26	2.04	2.16	1.92	92												
378	2.85	2.99	26.4	78.1	77.9	0.6	1.4	1.8	2.3	8.0	9.2	26.4	28.4	2.97	3.10	1.93	2.08	1.78	378												

*If the confidence limits for two regressed means overlap, the two means are not significantly different at the 5% level.

Table 1.--Two-year combined summary: Regressed means and 80% confidence limits for traits by stocks entered (Continued)

STOCK CODE	BREEDER'S NAME AND ADDRESS	STOCK		NO. PENS	AVG. CHICK PRICE (Cents)	MORTALITY				BODY WEIGHT (pounds)		AGE AT 50% PRODUCTION (days)				EGG PRODUCTION			
		BREEDING	STRAIN OR TRADENAME			GROWING (percent)	LAYING (percent)		RE- GRESSED MEAN	80% CONF. LIMITS	RE- GRESSED MEAN	80% CONF. LIMITS	RE- GRESSED MEAN	80% CONF. LIMITS	HEN HOUSED (number)	RE- GRESSED MEAN	80% CONF. LIMITS	HEN DAY (percent)	
							RE- GRESSED MEAN	80% CONF. LIMITS											
96	Hy-Line Poultry Farm Des Moines, Iowa 50309	---	INX	41 12	43.5	3.0 3.7	2.3 10.8	12.3 13.9	4.0 4.2	173 176	222 234	70.5 71.7							
385	Hy-Line Poultry Farm Des Moines, Iowa 50309	---	INX	25 13	45.6	3.0 3.7	2.3 11.5	13.0 14.7	4.0 3.8	174 177	223 230	69.9 71.2							
388	Hy-Line Poultry Farm Des Moines, Iowa 50309	---	INX	42 18	48.0	3.7 4.5	2.9 11.7	13.2 14.7	4.0 4.2	172 175	225 231	70.6 71.8							
356	Ideal Pity. Br. Farm, Inc. Cameron, Texas 76520	Synx WL BX	Ideal 236	45 15	38.0	3.4 4.2	2.7 10.7	12.2 13.7	4.6 4.8	173 176	222 232	70.5 71.7							
152	Indiana Farm Bureau Coop. Indianapolis, Ind. 46204	WL SX	Princess 55	27 8	37.8	4.8 5.7	3.9 14.8	16.5 18.3	4.3 4.5	178 181	211 217	68.5 69.8							
234	Indiana Farm Bureau Coop. Indianapolis, Ind. 46204	WL SX	Duchess 60	4 2	39.0	3.3 4.0	2.7 13.1	14.6 16.2	4.5 4.8	174 182	208 224	70.1 71.9							
110	Kimber Farms, Inc. Fremont, Calif. 94536	WL SX	Kimber K 137	35 13	36.0	3.5 4.3	2.8 11.7	13.2 14.8	4.2 4.4	170 172	224 230	70.5 71.7							
111	Kimber Farms, Inc. Fremont, Calif. 94536	WL SX	Kimber K 141	29 10	36.0	4.4 5.2	3.5 13.7	15.3 17.1	4.5 4.7	174 176	212 218	68.8 70.0							
112	Kimber Farms, Inc. Fremont, Calif. 94536	WL SX	Kimber K 155	13 5	35.0	3.2 3.9	2.5 11.5	13.1 14.8	4.4 4.6	170 173	229 236	71.7 73.1							
117	Lawton, A. C. & Sons Foxboro, Mass. 02035	RIRx WPR BX	Buff Sex Link	19 7	34.0	4.0 4.9	3.2 10.0	11.5 13.1	6.1 6.3	176 179	199	62.0							
389	Mettling's Hatchery Slayton, Minn. 56172	CG x WL BX	Cal-Lyne	6 3	30.0	3.7 4.4	3.0 12.7	14.3 15.9	4.5 4.7	172 176	219 227	70.2 71.8							
598	Nelson, George F. Truro, Nova Scotia, Can.	RIR (LS x RIR) BX	Sex Link	10 6	27.0	3.4 4.2	2.7 15.8	17.6 19.5	5.7 5.9	171 177	181 197	60.3 63.3							
37	N. Cent. Reg. Pity. Br. Lab. Lafayette, Ind. 47907	WL PS	Reg. Cornell Contr.	45 13	40.8	5.8 6.8	4.9 16.5	18.3 20.1	4.6 4.8	181 184	190 196	64.0 65.2							
352	Parks Poultry Farm Altoona, Pa. 16601	WL SX	Keystone B-1	34 11	35.2	4.5 5.4	3.7 12.8	11.2 13.9	4.8 5.0	171 174	222 236	69.8 71.1							
398	Parks Poultry Farm Altoona, Pa. 16601	WL SX	Keystone B-12	1 1	35.0	4.1 4.6	3.7 14.9	16.0 17.3	4.4 4.7	177 181	209 217	66.2 68.0							
396	Parks Poultry Farm Altoona, Pa. 16601	WL INX	Keystone K-1710	1 1	25.0	4.3 4.8	3.9 14.3	15.3 16.4	4.2 4.5	177 181	200 214	66.2 68.0							

STOCK CODE	FEED PER POUND OF EGGS PRODUCED			EGG WEIGHT (oz./doz.)			LARGE AND EXTRA LARGE EGGS			ALBUMEN QUALITY (Haugh units)			BLOOD SPOTS						MEAT SPOTS						SPECIFIC GRAVITY SCORE			INCOME OVER FEED AND CHICK COST (\$dollars)			STOCK CODE
	POUNDS			DOZ.			PERCENT			UNITS			PERCENT			PERCENT			PERCENT			SCORE			COST						
	RE-GRESSED MEAN	80%* CONF. LIMITS	80%* CONF. LIMITS	RE-GRESSED MEAN	80%* CONF. LIMITS	80%* CONF. LIMITS	RE-GRESSED MEAN	80%* CONF. LIMITS	80%* CONF. LIMITS	RE-GRESSED MEAN	80%* CONF. LIMITS	80%* CONF. LIMITS	RE-GRESSED MEAN	80%* CONF. LIMITS	80%* CONF. LIMITS	RE-GRESSED MEAN	80%* CONF. LIMITS	80%* CONF. LIMITS	RE-GRESSED MEAN	80%* CONF. LIMITS	80%* CONF. LIMITS	RE-GRESSED MEAN	80%* CONF. LIMITS	80%* CONF. LIMITS	RE-GRESSED MEAN	80%* CONF. LIMITS	80%* CONF. LIMITS				
96	2.70	2.64	2.76	25.8	25.6	26.0	77.0	75.2	78.8	74.2	73.6	74.8	0.7	0.6	0.9	1.2	0.9	1.5	0.0	0.1	0.0	0.1	0.2	0.3	4.25	4.14	4.36	2.26	2.13	2.39	96
385	2.66	2.60	2.72	26.2	25.9	26.5	80.8	78.9	82.7	73.7	73.0	74.4	1.0	0.8	1.2	1.4	1.0	1.7	0.1	0.2	0.1	0.2	0.1	0.3	4.29	4.17	4.41	2.22	2.09	2.35	385
388	2.62	2.56	2.68	26.1	25.9	26.3	80.5	78.8	82.2	72.9	72.3	73.5	0.5	0.4	0.7	0.8	0.6	1.0	0.0	0.1	0.0	0.1	0.2	0.4	4.50	4.39	4.61	2.29	2.17	2.41	388
356	2.75	2.69	2.81	25.5	25.3	25.7	75.0	73.2	76.8	76.0	75.3	76.7	0.9	0.7	1.1	1.3	1.0	1.6	0.1	0.2	0.1	0.2	0.3	0.5	4.20	4.09	4.31	2.29	2.16	2.42	356
152	2.80	2.74	2.86	25.4	25.1	25.7	74.9	72.9	76.9	82.2	81.5	82.9	0.8	0.7	1.0	1.2	0.9	1.5	0.1	0.2	0.1	0.2	0.2	0.4	4.00	3.88	4.12	2.05	1.90	2.20	152
234	2.84	2.74	2.94	25.2	24.8	25.6	72.3	69.5	75.1	82.0	80.9	83.1	1.4	1.2	1.6	1.7	1.3	2.1	0.1	0.4	0.1	0.4	0.5	1.1	4.04	3.84	4.24	2.06	1.86	2.26	234
110	2.73	2.67	2.79	24.9	24.6	25.2	69.0	67.2	70.8	82.5	81.9	83.1	0.9	0.7	1.1	1.3	1.0	1.7	0.1	0.2	0.1	0.2	0.2	0.4	4.58	4.46	4.70	2.28	2.15	2.41	110
111	2.74	2.67	2.81	25.1	24.8	25.4	72.9	71.1	74.7	78.1	77.4	78.8	1.4	1.2	1.7	1.7	1.4	2.2	0.0	0.2	0.0	0.2	0.2	0.4	4.51	4.39	4.63	2.10	1.97	2.23	111
112	2.73	2.65	2.81	25.1	24.8	25.4	68.9	66.7	71.1	81.6	80.7	82.5	0.8	0.6	1.0	1.7	1.3	2.2	0.1	0.2	0.1	0.2	0.3	0.7	4.37	4.22	4.52	2.29	2.13	2.45	112
117	3.21	3.14	3.28	26.7	26.5	26.9	83.1	81.1	85.1	78.2	77.4	79.0	1.4	1.2	1.7	3.4	2.9	4.0	6.0	8.1	7.0	8.1	18.7	20.4	3.78	3.65	3.91	1.59	1.44	1.74	117
389	2.83	2.74	2.92	25.4	25.1	25.7	73.7	71.2	76.2	76.5	75.4	77.6	1.3	1.1	1.5	1.2	0.9	1.6	0.0	0.2	0.0	0.2	1.9	2.9	3.85	3.67	4.03	2.14	1.96	2.32	389
598	3.38	3.30	3.46	25.5	25.2	25.8	73.0	70.8	75.2	76.1	75.2	77.0	1.4	1.2	1.6	2.4	1.9	2.9	5.3	7.6	6.4	7.6	18.2	20.2	3.42	3.26	3.58	1.29	1.13	1.45	598
37	3.21	3.15	3.27	24.2	24.0	24.4	61.2	59.4	63.0	78.3	77.7	78.9	1.4	1.1	1.6	1.9	1.5	2.3	0.1	0.2	0.1	0.2	0.3	0.5	4.03	3.91	4.15	1.37	1.24	1.50	37
352	2.84	2.78	2.90	25.4	25.1	25.7	74.5	72.7	76.3	78.1	77.4	78.8	1.2	1.0	1.4	2.1	1.7	2.5	0.1	0.3	0.1	0.3	0.3	0.6	4.38	4.26	4.50	2.17	2.04	2.30	352
398	3.01	2.90	3.12	24.6	24.2	25.0	66.4	63.0	69.8	74.8	73.3	76.3	1.2	1.0	1.3	1.7	1.4	2.0	0.1	0.4	0.6	1.4	1.2	2.8	4.05	3.79	4.31	1.83	1.64	2.02	398
396	2.97	2.85	3.09	25.4	25.0	25.8	72.1	68.7	75.5	76.6	75.1	78.1	1.1	1.0	1.3	1.7	1.4	2.0	0.1	0.4	0.6	1.4	1.2	2.8	3.93	3.68	4.18	1.85	1.66	2.04	396

*If the confidence limits for two regressed means overlap, the two means are not significantly different at the 5% level.

Table 1.--Two-year combined summary: Regressed means and 80% confidence limits for traits by stocks entered (Continued)

STOCK CODE	BREEDER'S NAME AND ADDRESS	STOCK		NO. PENS	AVG. CHICK PRICE (Cents)	MORTALITY				BODY WEIGHT (pounds)		AGE AT 50% PRODUCTION (days)		HEN HOUSED (number)		EGG PRODUCTION		
		BREEDING	STRAIN OR TRADENAME			GROWING (percent)	LAYING (percent)		RE- GRESS- ED MEAN	80% CONF. LIMITS	RE- GRESS- ED MEAN	80% CONF. LIMITS	RE- GRESS- ED MEAN	80% CONF. LIMITS	RE- GRESS- ED MEAN	80% CONF. LIMITS	RE- GRESS- ED MEAN	80% CONF. LIMITS
							NO. LOCAL- TIONS	RE- GRESS- ED MEAN										
382	Parks Poultry Farm Altoona, Pa. 16601	RIR x WPR BX	Sil-Go-Links -----	8 2	35.5	4.3 3.5	14.1 12.5	15.8	5.6 5.8	6.0	173 176	213 221	66.4 68.1					
603	Raynor's Poultry Br. Farm Charlottetown, P.E.I., Can.	WL SX	Raynor 67 -----	2 1	32.0	4.4 3.8	15.7 14.4	17.0	4.8 4.5	5.1	177 181	203 211	66.1 67.9					
403	Rice Hatchery Clinton, Mo. 64735	WL SX	Rice Line R-37-----	3 1	40.0	4.1 3.5	14.2 12.9	15.7	4.7 4.5	4.9	176 180	212 221	67.2 69.1					
566	St. Augustin Coop. Hatchery St. St. Augustin, Quebec, Can.	WL SX	Corvette A-1 -----	2 1	38.0	3.8 3.2	13.5 12.3	14.7	4.5 4.2	4.8	171 175	213 222	66.3 68.2					
181	Shaver Poultry Breeding Farm Galt, Ontario, Canada	WL SX	Starcross 288 -----	68 23	37.6	3.7 3.0	14.0 12.5	15.6	4.7 4.5	4.9	173 175	233 239	74.3 75.4					
333	Shaver Poultry Breeding Farm Galt, Ontario, Canada	RIR SX	Starcross 555 -----	4 2	37.0	4.1 3.5	14.4 13.0	15.9	5.2 4.9	5.5	176 180	213 222	67.6 69.4					
533	Starline Breeders Hatchery Saskatoon, Sask., Canada	CG x WL BX	Pearlette -----	11 6	38.0	3.4 2.7	14.3 16.1	17.9	5.4 5.1	5.7	173 176	210 218	67.6 69.0					
186	Stever Hatchery Huntingdon, Pa. 16652	WL SX	Stever SC-300 -----	11 5	33.0	4.9 4.1	15.1 13.4	16.9	4.3 4.1	4.5	182 178	200 207	65.5 67.0					
190	Stone's Poultry Farm Dinuba, Calif. 93618	WL SX	Stone H 56-----	59 18	33.3	4.1 3.3	14.3 15.9	17.6	4.4 4.2	4.6	170 173	212 218	68.1 69.2					
336	Sturtevant Farms, Inc. Halifax, Mass. 02338	RIR x BPR BX	Black Sex Link-----	14 6	32.0	2.8 3.5	9.6 11.1	12.6	6.0 6.2	6.4	174 180	213 220	64.6 66.0					
400	Sturtevant Farms, Inc. Halifax, Mass. 02338	RIR PS	Sturtevant Red -----	3 3	32.0	3.8 3.2	14.2 12.8	15.7	5.7 5.4	6.0	180 183	202 210	64.5 65.3					
381	Sykes, F & G, Ltd. Warminster, Wilts., Eng.	WL x RIR BX	Sykes Hybrid 3-----	3 1	51.0	4.4 3.8	15.0 16.4	18.0	4.8 5.1	5.4	167 171	216 224	70.4 72.3					
556	Triska, Eric Edmonton, Alberta, Can.	WL SX	Belmont 292 -----	6 4	35.0	4.6 3.8	17.1 15.3	18.8	4.8 4.5	5.1	179 182	206 215	69.0 70.6					
305	Warren, J. J., Inc. N. Brookfield, Mass. 01535	RIR x RIW BX	Sex-Sal-Link-F-----	27 11	39.0	3.7 3.0	11.6 10.2	13.2	5.8 5.6	6.0	177 180	211 218	66.1 67.3					
290	Welp's Breeding Farm Bancroft, Iowa 50517	WL SX	Welpline 937-----	47 14	35.2	2.8 3.5	12.4 14.0	15.6	4.0 4.2	4.2	171 173	218 224	69.6 70.7					

STOCK CODE	FEED PER POUND OF EGGS PRODUCED (pounds)			EGG WEIGHT (oz./doz.)			LARGE AND EXTRA LARGE EGGS (percent)			ALBUMEN QUALITY (Haugh units)			BLOOD SPOTS						MEAT SPOTS						SPECIFIC GRAVITY SCORE			INCOME OVER FEED AND CHICK COST (dollars)			STOCK CODE
	RE-GRESSED MEAN	80% CONF. LIMITS	GRESSED MEAN	RE-GRESSED MEAN	80% CONF. LIMITS	GRESSED MEAN	RE-GRESSED MEAN	80% CONF. LIMITS	GRESSED MEAN	RE-GRESSED MEAN	80% CONF. LIMITS	LESS THAN 1/8 INCH OR MORE (percent)	RE-GRESSED MEAN	80% CONF. LIMITS	LESS THAN 1/8 INCH OR MORE (percent)	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS						
382	3.09	3.00	26.2	25.9	79.8	77.2	77.9	79.0	76.8	1.1	0.9	2.0	4.2	3.1	10.0	3.81	4.00	1.74	1.92							382					
603	3.01	2.89	24.6	24.2	63.6	60.4	76.8	78.2	75.4	1.1	1.0	1.4	0.1	0.0	0.0	4.20	4.44	1.68	1.88							603					
403	2.89	2.78	24.9	24.5	70.4	67.3	77.8	79.1	76.5	1.1	1.0	1.4	0.1	0.0	0.0	4.20	4.43	1.93	2.13							403					
566	2.92	2.80	24.8	24.3	68.3	65.1	75.7	77.1	74.3	1.0	0.9	1.4	0.2	0.0	0.1	4.09	4.33	1.89	2.09							566					
181	2.71	2.66	25.9	25.7	79.2	77.6	77.1	77.6	76.6	0.8	0.7	1.1	0.1	0.0	0.2	4.04	4.14	2.42	2.53							181					
333	2.93	2.83	25.8	25.5	75.7	72.8	72.9	74.1	71.7	1.0	0.8	1.5	4.3	3.0	15.4	2.88	3.09	1.92	2.12							333					
533	3.00	2.92	25.5	25.2	73.6	71.5	75.6	76.5	74.7	1.0	0.8	0.8	0.1	0.0	0.3	3.96	4.11	1.71	1.87							533					
186	2.97	2.89	25.0	24.7	70.7	68.3	76.8	77.7	75.9	0.9	0.7	1.3	0.1	0.0	0.5	4.37	4.53	1.89	2.06							186					
190	2.88	2.82	25.0	24.7	69.9	68.2	79.1	79.7	78.5	0.8	0.6	0.6	0.1	0.0	0.5	4.04	4.14	2.00	2.12							190					
336	3.16	3.08	26.3	26.0	78.7	76.5	76.5	77.3	75.7	1.1	0.9	1.3	9.5	8.2	17.8	3.14	3.28	1.82	1.97							336					
400	3.22	3.12	25.2	25.6	74.3	71.5	76.4	77.7	75.1	1.1	1.0	2.5	4.9	3.6	9.4	3.21	3.43	1.71	1.90							400					
381	2.84	2.73	25.1	24.7	71.5	68.4	76.1	77.4	74.8	1.0	0.9	1.4	1.6	0.8	4.5	4.09	4.32	1.94	2.14							381					
556	2.90	2.81	24.9	24.6	67.7	65.2	78.6	79.7	77.5	1.3	1.1	1.6	0.1	0.0	0.1	3.98	4.16	1.84	2.02							556					
305	3.03	2.97	26.3	26.0	79.6	77.7	78.4	79.1	77.7	0.8	0.6	1.7	6.5	5.6	13.3	3.64	3.76	1.89	2.03							305					
290	2.74	2.68	25.1	24.8	72.0	70.2	77.3	77.9	76.7	1.2	1.0	1.4	0.1	0.0	0.4	3.98	4.08	2.25	2.37							290					

*If the confidence limits for two repressed means overlap, the two means are not significantly different at the 5% level.

PROCEDURES USED FOR COMPUTING COMBINED SUMMARY VALUES

Statistical Methods

The 2-year combined summary includes performance data on 51 stocks that were entered in both the 1966-67 and 1967-68 tests and on 20 stocks that were entered only in the 1967-68 tests. The 1966-67 tests were conducted at 27 different locations, and the 1967-68 tests were conducted at 24 locations. Data for all 16 traits included in the combined analysis were reported for all locations.

Replicate data were reported by 11 locations in 1966-67 and by 14 locations in 1967-68. In addition, five locations in 1966-67 and six in 1967-68 tested the stocks in replicate pens, but the number of birds per replicate was too small for a valid analysis. Consequently, the replicate data were combined by entries within each of these locations, and the resulting entry average was used in the computations. This was done to more nearly equalize the variance among pens throughout all tests. The number of pens and the number of stocks tested at each location for the 2 years are given in table 3.

The percentage data for both years for the six traits--growing mortality, laying mortality, large blood spots, small blood spots, large meat spots, and small meat spots--were converted to angles with the arcsin transformation prior to analysis. However, the test-year adjustment factors shown in table 3 and the regressed means and confidence limits shown for these traits in table 1, are given in percent.

The replicate data were analyzed by least-squares procedures to obtain the test-year adjustment factors shown in table 3, and the repeatability estimates and the correlations among pens within tests shown in table 2. The test-year adjustment factors were then used to adjust the simple stock average for test and year effects. The adjusted stock averages (the least-squares stock means) were then regressed toward the overall mean ($\hat{\mu}$) to account for variations in number of tests entered, number of years entered, and number of replicates per test. The formula used to compute the regressed mean is:

$$\text{Regressed Mean} = \hat{\mu} + \frac{r_{2/C}}{1+(k_3-1)x_1+(k_1-k_3)x_2+(k_2-k_3)r_1+[(1/C)-k_1-k_2+k_3]r_2}(\hat{s})$$

where: $\hat{\mu}$ = the average of the test and year adjusted stock means.

r_1 = repeatability within year.

r_2 = repeatability from year-to-year.

x_1 = the correlation among replicates within year and test.

x_2 = the correlation among pens of the same stock from year-to-year for the same test.

k_1 = an average of the number of pens per test (averaged over years).

k_2 = an average of the number of pens per year (averaged over tests).

k_3 = an average of the number of replicates per test-year subclass.

C = the diagonal inverse element for that stock. The reciprocal of C , i.e., $\frac{1}{C}$, is equal to nk_3 if the assumption is made that the adjustments for test-year effects are made without error; where n is the number of test-year subclasses in which that stock is entered.

s = the test-year adjusted stock average minus the overall mean $\hat{\mu}$.

The correlations used in computing the regression coefficient were obtained from estimates of the variance components for stocks ($\hat{\sigma}_s^2$), the stock-X-test interaction ($\hat{\sigma}_{st}^2$), the stock-X-year interaction ($\hat{\sigma}_{sy}^2$), and the random error ($\hat{\sigma}_e^2$). The variance component estimates were obtained by equating the computed mean squares for these effects to their expectations. The mean square for stocks was adjusted for the test-year subclass by least-squares procedures for the effects of stocks and the test-year subclasses. The three-factor interaction was assumed to be non-existent. Ratios of the variance component estimates that were used to compute the correlations follow.

$$\text{Correlation Among Replicates} = x_1 = \frac{\hat{\sigma}_s^2 + \hat{\sigma}_{st}^2 + \hat{\sigma}_{sy}^2}{\hat{\sigma}_s^2 + \hat{\sigma}_{st}^2 + \hat{\sigma}_{sy}^2 + \hat{\sigma}_e^2}$$

$$\text{Correlation from Year-to-Year (same test)} = x_2 = \frac{\hat{\sigma}_s^2 + \hat{\sigma}_{st}^2}{\hat{\sigma}_s^2 + \hat{\sigma}_{st}^2 + \hat{\sigma}_{sy}^2 + \hat{\sigma}_e^2}$$

$$\text{Repeatability from Test-to-Test (within year)} = r_1 = \frac{\hat{\sigma}_s^2 + \hat{\sigma}_{sy}^2}{\hat{\sigma}_s^2 + \hat{\sigma}_{st}^2 + \hat{\sigma}_{sy}^2 + \hat{\sigma}_e^2}$$

$$\text{Repeatability from Test-to-Test (between years)} = r_2 = \frac{\hat{\sigma}_s^2}{\hat{\sigma}_s^2 + \hat{\sigma}_{st}^2 + \hat{\sigma}_{sy}^2 + \hat{\sigma}_e^2}$$

An approximate standard error (SE) was computed for each regressed mean as follows:

$$SE = b \sqrt{C(\hat{\sigma}_e^2 + k_1 \hat{\sigma}_{st}^2 + k_2 \hat{\sigma}_{sy}^2)}$$

where b is the regression coefficient given above in the formula for the regressed mean. Confidence limits were then computed for each regressed mean as follows:

$$\text{Regressed Mean} \pm 1.3 \text{ SE}$$

The constant 1.3 was selected in order that the probability of the confidence limits overlapping by chance alone between any two means would be about 0.03. This makes the test of significance among regressed means almost comparable to using Duncan's range test at the 0.05 level of probability.

Definitions of Statistical Terms

The following definitions will help the reader interpret the analytical procedures:

Overall mean	The average of the test-year adjusted means for all stocks. This is an estimate of what the overall average would have been had all stocks been entered in all tests in both years.
Range	The range represents the difference between the expected maximum and minimum performance among the 71 stocks, based on the regressed means.
Common stocks	Stocks that are being tested at more than one location.
Test-year adjustment factor.	The amount added to or subtracted from the actual performance of the stocks at a given location in a given year to bring them to the average of all the location-year subclasses that had complete data. These factors were determined on an intrastock basis with a least-squares analysis, and they are given in table 3.
Repeatability within year.	An intraclass correlation that measures the tendency for common stocks to rank the same from test-to-test within year. Theoretically, it can vary from 0.00 to 1.00.
Repeatability between years.	A correlation which measures the tendency for common stocks to rank the same from test-to-test from one year to another. The difference between the repeatability within year and repeatability between years indicates the relative importance of the stock-by-year interaction.
Correlation among replicates.	This correlation measures the repeatability among replicates of the same stock in the same test and year. The higher the correlation among replicates the less need there is for replication of stocks within test and year.
Correlation from year-to-year within tests.	A correlation which measures the tendency for common stock to rank the same from year-to-year when tested at the same location. The difference in the repeatability between years and in the correlation from year-to-year within tests indicates the relative importance of the stock-by-test interaction.
Confidence limits	The confidence limits for each regressed mean are computed so that the probability is about 0.08 that the "true" stock mean lies within the interval. They are presented in this report, however, for the purpose of providing approximate tests of significance for differences among stocks.

Table 2. --Analytical data for the traits measured

Test	Overall means	Regressed means		Repeatability		Correlations within test	
				Within year	Year-to-year	Among replicates	Year-to-year
		Min.	Max.	(r_1)	(r_2)	(x_1)	(x_2)
Growing mortality percent..	4.1	2.7	5.8	0.2311	0.0940	0.2311	0.0940
Laying mortality..... percent..	14.6	9.0	18.3	.1539	.1059	.2139	.1659
Body weight..... pounds..	4.8	4.0	6.7	.9127	.8919	.9411	.9203
Age at 50 percent production.. days..	174.5	166	182	.4393	.4105	.6173	.5885
Hen-housed egg production..number..	212.8	189	234	.3458	.3078	.4519	.4139
Hen-day egg production.... percent..	67.9	61.8	74.3	.4424	.4029	.5762	.5367
Feed per pound of eggs pounds..	2.91	2.61	3.38	.5452	.5239	.6168	.5956
Egg weight..... ounces/dozen..	25.3	24.2	27.3	.7358	.6976	.8077	.7694
Large and extra large eggs. percent..	72.4	61.2	87.1	.6749	.6247	.7767	.7265
Albumen quality.....Haugh units..	77.5	72.9	82.5	.6328	.6221	.7138	.7031
Large blood spots..... percent..	1.1	.5	1.5	.1088	.0686	.3104	.2701
Small blood spots..... percent..	1.7	.8	3.4	.1766	.1506	.4025	.3766
Large meat spots..... percent..	.6	0	9.5	.7730	.7562	.8598	.8430
Small meat spots percent..	2.0	.1	26.4	.8716	.8687	.9172	.9143
Specific gravity..... score..	3.90	2.88	4.58	.5976	.5810	.6819	.6653
Income over feed and chick cost..... dollars..	1.93	1.29	2.46	.4070	.3780	.5972	.5683

Table 3.--Factors used to adjust for test differences

Test	Pens		Stocks tested		Mortality (percent)			
	(number)		(number)		Growing period		Laying period	
	1967	1968	1967	1968	1967	1968	1967	1968
Arizona - Floor -----	5	5	5	5	+ 2.28	+ 0.92	+ 7.13	- 8.06
Arizona No.3 -(5/cage) -----	5	5	5	5	+ 2.28	+ .92	+ 7.15	-14.96
Arizona No.5 -(2/cage)-----	5	5	5	5	+ 1.94	+ 1.27	+ 3.40	- .57
Br. Columbia No. 1 -(5/cage)-	44	20	11	10	+ 1.04	+ .37	- .90	- 4.85
Br. Columbia No. 2 -(5/cage)-	--	20	--	10	-----	+ .86	-----	- 8.47
California No. 3 -----	92	--	23	--	+ 1.55	-----	+ 7.69	-----
Central Canada No. 1 -----	14	30	14	15	+ 4.16	+ 1.24	+ 2.58	+ 2.41
Central Canada No. 2 -----	14	--	14	--	+ 4.16	-----	+ 3.94	-----
Central Canada No. 3 -----	14	--	14	--	+ 1.28	-----	+ .05	-----
Central Canada No. 4 -----	14	--	14	--	+ 3.44	-----	- .95	-----
Florida -----	48	48	12	12	- 2.47	- 2.63	+ .64	- .57
Minnesota No. 1 - Floor -----	15	13	15	13	+ 1.62	+ .06	+10.10	+ 3.68
Minnesota No. 3 - (3/cage) ---	15	--	15	--	+ 2.48	-----	+ 4.26	-----
Minnesota No. 4 - (3/cage) ---	--	39	--	13	-----	- .30	-----	- 5.17
Missouri - Cage (8/cage) -----	54	45	17	15	+ 2.82	+ 2.15	+ 2.22	- 1.75
Missouri - Floor -----	84	93	28	31	+ 2.22	+ 2.61	+ 6.97	+ 5.66
New Brunswick No. 2 -----	--	16	--	8	-----	+ 7.95	-----	+ 6.30
New Brunswick No. 3 -----	--	16	--	8	-----	+ 7.77	-----	+ 8.24
New Hamp. No. 2 - (6/cage) --	16	16	16	16	- .43	- 8.13	+ 4.49	+ 1.19
New Hamp. No. 4 - (2/cage) --	16	16	16	16	- 4.87	- 3.11	-13.13	- 5.19
New Hamp. No. 6-----	16	16	16	16	- 4.87	- 3.11	- 9.57	- 1.37
New Jersey -----	12	12	12	12	+ 3.46	+ 2.79	+ 7.30	+ 3.35
Central New York -----	32	--	16	--	+ .45	-----	- 2.91	-----
N. Carolina No. 2 -----	38	40	19	20	+ .09	- 1.16	- 7.07	- 7.71
N. Carolina No. 3 -----	38	40	19	20	+ 3.98	+ 1.12	- 2.21	- 2.48
N. Carolina No. 4 - (2/cage)--	76	80	19	20	+ 2.03	- .02	- 4.66	- 5.66
Pennsylvania -----	30	30	30	30	- 1.63	+ 4.24	+ 4.50	+11.81
Tennessee No. 1 - (1/cage) ---	40	16	20	16	-10.81	-11.48	+ .44	- 3.52
Tennessee No. 2 - (2/cage) ---	--	32	--	16	-----	-15.11	-----	-14.63
Texas - Cage (1/cage)-----	19	--	17	--	- 3.85	-----	+ 4.23	-----
Texas - Cage (2/cage)-----	19	28	17	14	- 3.85	+ 1.41	+ 2.88	+ 3.27
Wisconsin-----	26	--	13	--	+ .99	-----	+ .48	-----

Table 3.--Factors used to adjust for test differences--Continued

Test	Body weight (pounds)		Age at 50 percent production (days)		Egg production			
					Hen-housed (number)		Hen-day (percent)	
	1967	1968	1967	1968	1967	1968	1967	1968
Arizona - Floor -----	+0.28	+0.35	- 9.05	-1.98	- 4.58	+17.03	+3.01	+2.86
Arizona No. 3 - (5/cage) -----	+ .34	+ .35	- 9.85	+ .83	+ .11	+20.95	+4.37	+1.98
Arizona No. 5 - (2/cage) -----	+ .42	+ .42	- 4.02	-4.40	- .31	+ 4.20	+2.51	+2.28
Br. Columbia No. 1 -(5/cage)-	- .11	- .11	+ 9.49	+9.12	+ 5.47	+ 9.98	+1.47	+1.24
Br. Columbia No. 2 -(5/cage)-	-----	- .02	-----	+1.42	-----	+33.62	-----	+2.59
California No. 3 -----	- .41	-----	+ 7.52	-----	-51.43	-----	+3.58	-----
Central Canada No. 1 -----	- .18	- .18	+ 5.89	+ .32	-15.82	- 5.46	-4.71	-2.46
Central Canada No. 2 -----	- .14	-----	+ 3.69	-----	-17.39	-----	-4.73	-----
Central Canada No. 3 -----	- .10	-----	+ 2.62	-----	- 6.09	-----	-3.79	-----
Central Canada No. 4 -----	- .15	-----	+ 2.89	-----	- 7.40	-----	-4.45	-----
Florida -----	- .01	+ .27	+ 2.33	+ .36	-30.02	-30.23	- .60	-1.98
Minnesota No. 1 - Floor-----	- .48	- .29	+10.69	-9.68	-16.39	- 8.24	+ .33	+5.02
Minnesota No. 3 - (3/cage) ---	- .18	-----	+ 4.49	-----	+ 5.58	-----	+4.41	-----
Minnesota No. 4 - (3/cage) ---	-----	- .22	-----	-7.99	-----	+18.71	-----	+5.43
Missouri - Cage (8/cage) -----	- .11	- .11	- 3.02	-3.40	-24.09	-19.58	+3.25	+3.02
Missouri - Floor -----	+ .18	+ .01	+ 9.43	+4.91	-22.21	-15.06	-4.80	-3.57
New Brunswick No. 2 -----	-----	- .43	-----	+8.66	-----	-19.55	-----	-6.68
New Brunswick No. 3 -----	-----	- .36	-----	+6.48	-----	-16.38	-----	-5.85
New Hamp. No. 2 - (6/cage) --	+ .25	+ .03	-18.15	-7.39	- 7.39	+19.26	-5.65	+4.19
New Hamp. No. 4 - (2/cage) --	+ .40	- .18	+ .93	-2.45	+31.29	+10.99	+1.84	- .90
New Hamp. No. 6-----	+ .15	- .08	- 5.33	-1.95	+44.05	+11.31	+7.96	+2.09
New Jersey -----	+ .05	+ .04	+ 7.19	+6.81	-20.59	-16.08	-2.15	-2.38
Central New York-----	+ .02	-----	+ 5.31	-----	- .93	-----	-2.79	-----
N. Carolina No. 2 -----	+ .09	+ .13	- 8.71	-5.84	+39.42	+35.10	+4.24	+1.93
N. Carolina No. 3 -----	- .10	- .10	- 3.56	-2.42	+10.98	+ 1.06	- .20	-4.87
N. Carolina No. 4 - (2/cage) --	- .13	- .12	- 1.71	-1.89	+21.84	+27.67	+1.13	+1.63
Pennsylvania -----	+ .01	+ .14	- 1.55	-1.49	-15.79	-37.02	-2.26	-5.16
Tennessee No. 1 - (1/cage) ---	- .11	- .11	- .39	- .77	+ 8.15	+12.66	- .67	- .91
Tennessee No. 2 - (2/cage) ---	-----	+ .12	-----	+3.09	-----	+30.88	-----	+ .52
Texas - Cage (1/cage)-----	+ .09	-----	- 2.42	-----	+ 7.65	-----	+2.10	-----
Texas - Cage (2/cage)-----	+ .13	+ .24	- 2.95	+1.26	+ 6.01	+ 1.51	+1.32	+3.78
Wisconsin-----	+ .02	-----	+ 6.66	-----	-27.48	-----	-8.46	-----

Table 3. --Factors used to adjust for test differences-- Continued

Test	Feed per pound of eggs		Egg weight		Large and extra large eggs		Albumen quality	
	(pounds)		(oz. /dozen)		(percent)		(Haugh units)	
	1967	1968	1967	1968	1967	1968	1967	1968
Arizona - Floor-----	-0.08	-0.24	+0.95	+1.16	+25.55	+27.74	- 2.83	- 6.14
Arizona No. 3 - (5/cage) ----	+ .11	- .01	+ .45	+ .98	+14.73	+20.50	- 3.75	- 7.88
Arizona No. 5 - (2/cage) ----	+ .13	+ .22	+ .56	+ .47	+16.69	+17.84	- 6.22	- 5.95
Br. Columbia No. 1 -(5/cage)-	- .23	- .15	- .39	- .49	+ 6.12	+ 7.27	- 1.07	- .79
Br. Columbia No. 2 -(5/cage)-	----	- .11	----	- .22	-----	+11.20	-----	- .93
California No. 3-----	+ .07	----	+ .04	----	- 8.55	-----	+ 2.06	-----
Central Canada No. 1 -----	+ .08	- .07	+ .09	- .09	- .61	+ 4.11	+ 5.28	+ 5.23
Central Canada No. 2 -----	+ .14	----	+ .02	----	- 1.48	-----	+ 4.23	----
Central Canada No. 3 -----	+ .02	----	- .05	----	- 2.57	-----	+ 4.83	----
Central Canada No. 4 -----	+ .08	----	- .02	----	- 2.09	-----	+ 3.57	----
Florida-----	+ .02	+ .27	+ .37	+ .40	- 5.34	- .82	- 3.45	- 6.38
Minnesota No. 1 - Floor-----	- .57	- .29	+ .37	+ .46	-11.78	- 8.51	-10.86	- 6.22
Minnesota No. 3 - (3/cage) ---	- .06	----	-1.62	----	-10.55	-----	-11.86	-----
Minnesota No. 4 - (3/cage) ---	----	- .28	----	+ .35	-----	- 8.05	-----	- 9.31
Missouri - Cage (8/cage) -----	- .12	- .04	- .39	- .49	-14.61	-13.45	+ .39	+ .67
Missouri - Floor -----	+ .13	+ .08	+ .31	+ .37	- 8.38	- 7.64	- .01	+ .10
New Brunswick No. 2 -----	----	+ .15	----	- .25	-----	+ 3.39	----	+15.71
New Brunswick No. 3 -----	----	+ .21	----	- .11	-----	+ 5.31	----	+15.88
New Hamp. No. 2 - (6/cage)--	+ .01	- .28	+ .60	- .91	+ 1.01	- 2.82	+ 3.42	+11.85
New Hamp. No. 4 - (2/cage)--	+ .11	+ .06	+ .50	+ .45	- .85	- 2.56	+ 5.99	+ 8.33
New Hamp. No. 6 -----	- .11	+ .07	+ .04	+ .16	- 5.24	- 3.86	+ 5.13	+ 7.13
New Jersey -----	- .08	+ .02	+ .30	+ .21	+ 5.64	+ 6.79	- 5.19	- 4.92
Central New York-----	- .07	----	- .25	----	- 2.18	-----	+ .14	-----
N. Carolina No. 2 -----	- .23	- .10	- .97	-1.51	- 8.83	-15.15	+ .32	- 1.62
N. Carolina No. 3 -----	- .12	+ .27	- .66	- .89	- 6.03	-12.04	+ 3.70	- 1.10
N. Carolina No. 4 - (2/cage)--	- .12	+ .26	- .78	-1.49	- 8.42	-14.79	- .15	- 2.16
Pennsylvania-----	+ .11	+ .20	+ .26	+ .18	+ 4.19	- .02	+ 1.20	+ 1.45
Tennessee No. 1 - (1/cage) ---	- .07	+ .02	+ .05	- .06	- 6.70	- 5.55	+ .11	+ .39
Tennessee No. 2 - (2/cage) ---	----	+ .18	----	- .04	-----	+ 3.07	-----	+ 5.08
Texas - Cage (1/cage)-----	+ .02	----	+ .39	----	+ 7.56	-----	- 3.81	-----
Texas - Cage (2/cage)-----	+ .16	+ .17	+ .38	+ .63	+ 8.27	+ 6.42	- 4.24	- 3.77
Wisconsin-----	+ .10	----	+ .21	----	- 3.97	-----	- 1.59	-----

Table 3. --Factors used to adjust for test differences-- Continued

Test	Blood spots 1/8 inch or more		Blood spots less than 1/8 inch		Meat 1/8 inch or more	
	(percent)		(percent)		(percent)	
	1967	1968	1967	1968	1967	1968
Arizona - Floor -----	+4.29	+2.78	+0.43	+3.69	-2.23	+1.29
Arizona No. 3 - (5/cage)-----	+2.55	+2.78	+3.76	+1.36	- .53	+1.29
Arizona No. 5 - (2/cage)-----	+2.11	+1.71	-1.12	-1.21	+1.33	+1.15
Br. Columbia No. 1 - (5/cage) ----	+ .03	- .38	-2.04	-2.12	+ .90	+ .73
Br. Columbia No. 2 - (5/cage) ----	----	-2.46	----	-3.17	----	+ .84
California No. 3 -----	-3.20	----	-3.68	----	+ .57	----
Central Canada No. 1 -----	- .45	+1.40	- .54	+1.20	+ .27	+ .50
Central Canada No. 2 -----	- .22	----	- .12	----	+ .41	----
Central Canada No. 3 -----	-1.10	----	-1.35	----	+ .01	----
Central Canada No. 4 -----	-1.61	----	- .80	----	- .36	----
Florida -----	-3.53	-1.45	-3.71	-1.41	-1.10	+ .24
Minnesota No. 1 - Floor-----	- .66	+ .93	+ .49	+ .11	+ .78	+ .76
Minnesota No. 3 - (3/cage)-----	- .76	----	-1.02	----	+1.63	----
Minnesota No. 4 - (3/cage)-----	----	+ .48	----	+5.18	----	+ .37
Missouri - Cage (8/cage) -----	-1.44	-1.84	-3.38	-3.46	- .57	- .74
Missouri - Floor -----	-3.17	-1.11	-2.54	-1.70	-1.07	+ .21
New Brunswick No. 2 -----	----	- .35	----	- .78	----	-5.40
New Brunswick No. 3 -----	----	+ .80	----	- .18	----	-5.17
New Hamp. No. 2 - (6/cage)-----	+2.15	+1.48	+4.48	+2.51	+2.87	-1.75
New Hamp. No. 4 - (2/cage)-----	+3.74	+ .21	+6.26	+1.69	+2.32	+ .94
New Hamp. No. 6 -----	+2.62	+1.48	+4.51	-1.64	- .31	-3.34
New Jersey -----	+2.22	+1.82	+ .52	+ .43	+1.11	+ .93
Central New York-----	-1.90	----	- .66	----	+3.05	----
N. Carolina No. 2 -----	+1.38	+ .45	+ .80	+ .26	+1.19	- .26
N. Carolina No. 3 -----	+1.06	- .71	- .12	+ .43	+1.57	+ .78
N. Carolina No. 4 - (2/cage) -----	+ .06	-1.69	- .92	-1.71	+1.16	+ .65
Pennsylvania -----	+ .35	+ .65	+2.11	+ .17	+3.10	+4.26
Tennessee No. 1 - (1/cage)-----	-1.09	-1.49	+ .13	+ .05	+ .16	- .03
Tennessee No. 2 - (2/cage)-----	----	- .16	----	+ .19	----	+ .49
Texas - Cage (1/cage)-----	-2.45	----	+ .06	----	-4.96	----
Texas - Cage (2/cage)-----	-2.56	-1.87	- .81	+ .30	-5.22	-4.31
Wisconsin -----	-1.89	----	- .95	----	- .46	----

Table 3.--Factors used to adjust for test differences--Continued

Test	Meat spots less than 1/8 inch (percent)		Specific gravity score		Income over feed and chick cost (dollars)	
	1967	1968	1967	1968	1967	1968
Arizona - Floor -----	+1.01	+2.56	-1.87	-2.53	-0.21	+0.33
Arizona No. 3 - (5/cage) -----	+2.60	+2.56	-2.87	-2.26	- .59	+ .02
Arizona No. 5 - (2/cage) -----	+2.01	+3.15	-2.54	-2.53	- .72	- .20
Br. Columbia No. 1 - (5/cage) -----	+ .74	+1.87	+ .39	+ .41	- .12	+ .41
Br. Columbia No. 2 - (5/cage) -----	----	+2.20	----	+ .84	----	+2.10
California No. 3 -----	+1.14	----	- .77	----	- .12	----
Central Canada No. 1 -----	-1.52	+ .57	+1.18	+ .76	-1.01	+ .39
Central Canada No. 2 -----	- .34	----	+1.18	----	-1.07	----
Central Canada No. 3 -----	-2.10	----	+1.11	----	- .75	----
Central Canada No. 4 -----	-1.94	----	+1.11	----	- .87	----
Florida -----	+2.14	+2.37	-1.72	-1.34	-2.26	- .52
Minnesota No. 1 - Floor -----	+3.70	+2.20	+ .12	+ .15	+ .25	+ .30
Minnesota No. 3 - (3/cage) -----	+2.01	----	- .60	----	+ .20	----
Minnesota No. 4 - (3/cage) -----	----	+3.51	----	- .57	----	+ .47
Missouri - Cage (8/cage) -----	-1.11	+ .04	+ .33	+ .34	-1.50	- .98
Missouri - Floor -----	+2.07	+ .05	+ .50	+ .92	- .98	+ .27
New Brunswick No. 2 -----	----	-8.43	----	+1.24	----	- .54
New Brunswick No. 3 -----	----	-8.01	----	+ .97	----	- .37
New Hamp. No. 2 - (6/cage) -----	-7.78	+1.19	+1.42	+1.46	- .50	- .46
New Hamp. No. 4 - (2/cage) -----	-5.79	-2.36	+1.68	+ .88	- .17	-1.19
New Hamp. No. 6 -----	-3.76	-1.96	+1.37	+ .57	+ .16	-1.09
New Jersey -----	-5.62	-4.49	-1.74	-1.73	+ .77	+1.29
Central New York -----	+3.95	----	+ .53	----	- .54	----
N. Carolina No. 2 -----	+ .87	-1.19	+ .72	+ .57	+1.74	+1.75
N. Carolina No. 3 -----	+ .93	- .01	+ .85	+1.22	+1.40	+ .77
N. Carolina No. 4 - (2/cage) -----	- .48	- .95	+ .73	+ .79	+1.42	+1.17
Pennsylvania -----	+3.85	+5.99	- .65	- .45	+ .08	- .38
Tennessee No. 1 - (1/cage) -----	+1.73	+2.87	+ .19	+ .20	- .37	+ .16
Tennessee No. 2 - (2/cage) -----	----	+4.77	----	+ .58	----	+1.16
Texas - Cage (1/cage) -----	-3.14	----	- .61	----	+ .26	----
Texas - Cage (2/cage) -----	-3.21	-1.28	- .39	- .97	+ .11	+ .68
Wisconsin -----	+ .88	----	+ .90	----	- .18	----

RANGE GROUP RANKING BASED ON 1967-68 TESTS

How Group Rankings Were Determined for Each Trait

The information in this section deals only with the test data obtained during the 1967-68 test year.

The performance of each entry in the 14 Random Sample Egg Production Tests conducted during 1967-68 is reported as the Range Group Rank of the entry for the trait measured. These rankings were determined in the following manner. For each trait the entries in each test were aligned in descending order of performance from the most desirable to the least desirable. The "mean" or average performance for the trait was then determined. All entries above the mean are in range group 1 or 2, and those below the mean are in range group 3 or 4. The dividing point for the entries above or below the mean is the midpoint of the range between the mean and the top or bottom entry. An illustration follows.

Stocks entered in the Florida test had a mean, or average, of 251.08 eggs for the trait "Egg Production per Hen Housed." The highest number of eggs laid by an entry in this test was 279.30, and the lowest average number laid by an entry was 206.60 eggs. To arrive at the dividing point between the first and second range groups, the mean (251.08) was subtracted from the highest number of eggs (279.30). The result, 28.22 eggs, was divided by two to get the midpoint of the range (14.11 eggs). This was subtracted from the highest number of eggs (279.30 minus 14.11) to arrive at the dividing point (265.19 eggs) between the first and second range groups. To determine the dividing point between the third and fourth range groups, the same procedure was used, except that the lowest average number of eggs (206.60) was subtracted from the mean (251.08). This difference, or range (44.48 eggs) was then divided by two, and the result (22.24 eggs) was subtracted from the mean (251.08 minus 22.24) to get the dividing point (228.84) between the third and fourth range groups. These determinations for each trait and test are tabulated in table 4.

The breeders of the stock tested and the Range Group Ranking, by traits, of each entry of the stock are shown in table 5. Each entry is also identified by the abbreviated name of the entrant. If the sample was drawn from a source other than the entrant's hatchery or supply flock, the abbreviated name of the source of the sample is shown in parentheses following the entrant's name.

The listing of the entries in the four range groups, with all entries of each stock in one table, allows the reader to quickly evaluate a stock based on this method of analysis. It should be kept in mind, however, that this method provides just four broad classifications. One-tenth of an egg or one-tenth of a percent difference in mortality could move an entry up or down one Range Group Rank, depending on its place in the range grouping.

Entrants Other Than Breeder of Stock

<u>Name and Address</u>	<u>Stock Entered</u>
Arizona State Hatchery, Tucson, Ariz. 85702 -----	Kimber
Garrison, Earl W., Inc., Bridgeton, N.J. 08302-----	Stever
Hy-Lay Hatcheries, Inc., Bryan, Tex. 77803 -----	Hy-Line
Hy-Line Chicks, Box 730, Chatham, Ont. -----	Hy-Line
Johnson's Hatchery, Hamilton, Tex. 76513 -----	Hy-Line
Kazmeier Hatchery, Inc., Bryan, Tex. 77801 -----	Hy-Line
Keystone Poultry Breeding Farm, Terre Hill, Pa. 17581-----	Parks
Metz Poultry Farms, Inc., Belleville, Pa. 17004 -----	Stone
Pratts Hatchery, Glendale, Ariz. 85301 -----	Stone
Rapp Farms, Inc., Farmingdale, N.J. 07727 -----	Kimber
Rothway Hatcheries, Phoenix, Ariz. 85008 -----	Hy-Line
Tharp Brothers Mill & Hatchery, Pangburn, Ark. 72121 -----	Cashman

Table 4. --Upper and lower limits for each range group by traits and tests, 1967-68

Traits measured	Tests			
	Arizona	British Columbia	Central Canada	Florida
Income over feed and chick cost;				
Average - - - - dol./hen housed -	2.222	1.232	1.538	2.688
Range group 1 - - - - -	2.820 - 2.521	2.070 - 1.651	2.310 - 1.924	3.280 - 2.984
Range group 2 - - - - -	2.520 - 2.222	1.650 - 1.232	1.923 - 1.538	2.983 - 2.688
Range group 3 - - - - -	2.221 - 1.946	1.231 - 0.931	1.537 - 1.229	2.687 - 1.779
Range group 4 - - - - -	1.945 - 1.670	0.930 - 0.630	1.228 - 0.920	1.778 - 0.870
Egg production;				
Average - - number/hen housed -	209.96	194.58	217.55	251.08
Range group 1 - - - - -	238.50 - 224.23	269.30 - 231.94	245.50 - 231.53	279.30 - 265.19
Range group 2 - - - - -	224.22 - 209.96	231.93 - 194.58	231.52 - 217.55	265.18 - 251.08
Range group 3 - - - - -	209.95 - 200.78	194.57 - 171.94	217.54 - 202.88	251.07 - 228.84
Range group 4 - - - - -	200.77 - 191.60	171.93 - 149.30	202.87 - 188.20	228.83 - 206.60
Age at 50 percent production;				
Average - - - - -days -	171.2	166.0	173.5	173.1
Range group 1 - - - - -	166.0 - 168.6	159.0 - 162.5	163.0 - 168.3	167.0 - 170.0
Range group 2 - - - - -	168.7 - 171.2	162.6 - 166.0	168.4 - 173.5	170.1 - 173.1
Range group 3 - - - - -	171.3 - 173.1	166.1 - 168.5	173.6 - 179.8	173.2 - 176.5
Range group 4 - - - - -	173.2 - 175.0	168.6 - 171.0	179.9 - 186.0	176.6 - 180.0
Growing mortality;				
Average - - - - -percent -	2.24	3.20	2.62	6.80
Range group 1 - - - - -	0.40 - 1.32	0.00 - 1.60	1.10 - 1.86	0.90 - 3.85
Range group 2 - - - - -	1.33 - 2.24	1.61 - 3.20	1.87 - 2.62	3.86 - 6.80
Range group 3 - - - - -	2.25 - 3.12	3.21 - 5.60	2.63 - 4.61	6.81 - 25.60
Range group 4 - - - - -	3.13 - 4.00	5.61 - 8.00	4.62 - 6.60	25.61 - 44.40
Laying mortality;				
Average - - - - -percent -	27.20	25.65	13.05	14.99
Range group 1 - - - - -	18.00 - 22.60	14.40 - 20.03	6.60 - 9.82	8.50 - 11.75
Range group 2 - - - - -	22.61 - 27.20	20.04 - 25.65	9.83 - 13.05	11.76 - 14.99
Range group 3 - - - - -	27.21 - 30.95	25.66 - 32.53	13.06 - 19.27	15.00 - 23.25
Range group 4 - - - - -	30.96 - 34.70	32.54 - 39.40	19.28 - 25.50	23.26 - 31.50
Egg weight;				
Average - - - - ounces/dozen -	24.46	25.13	25.26	24.88
Range group 1 - - - - -	24.70 - 24.58	25.60 - 25.37	26.40 - 25.83	25.90 - 25.39
Range group 2 - - - - -	24.57 - 24.46	25.36 - 25.13	25.82 - 25.26	25.38 - 24.88
Range group 3 - - - - -	24.45 - 24.23	25.12 - 24.42	25.25 - 24.88	24.87 - 24.19
Range group 4 - - - - -	24.22 - 24.00	24.41 - 23.70	24.87 - 24.50	24.18 - 23.50
Large and extra large eggs;				
Average - - - - -percent -	50.80	56.85	66.16	73.77
Range group 1 - - - - -	57.50 - 54.15	63.80 - 60.33	79.50 - 72.83	84.40 - 79.08
Range group 2 - - - - -	54.14 - 50.80	60.32 - 56.85	72.82 - 66.16	79.07 - 73.77
Range group 3 - - - - -	50.79 - 46.05	56.84 - 46.13	66.15 - 60.78	73.76 - 64.63
Range group 4 - - - - -	46.04 - 41.30	46.12 - 35.40	60.77 - 55.40	64.62 - 55.50
Feed per pound of eggs;				
Average - - - - -pounds -	2.742	3.005	2.958	2.532
Range group 1 - - - - -	2.600 - 2.671	2.790 - 2.898	2.580 - 2.769	2.330 - 2.431
Range group 2 - - - - -	2.672 - 2.742	2.899 - 3.005	2.770 - 2.958	2.432 - 2.532
Range group 3 - - - - -	2.743 - 2.861	3.006 - 3.158	2.959 - 3.284	2.533 - 2.771
Range group 4 - - - - -	2.862 - 2.980	3.159 - 3.310	3.285 - 3.610	2.772 - 3.010
Albumen quality;				
Average - - - - Haugh units -	85.28	79.46	71.75	84.48
Range group 1 - - - - -	90.30 - 87.79	82.90 - 81.18	79.20 - 75.47	88.30 - 86.39
Range group 2 - - - - -	87.78 - 85.28	81.17 - 79.46	75.46 - 71.75	86.38 - 84.48
Range group 3 - - - - -	85.27 - 82.84	79.45 - 76.78	71.74 - 69.37	84.47 - 82.64
Range group 4 - - - - -	82.83 - 80.40	76.77 - 74.10	69.36 - 67.00	82.63 - 80.80
Blood spots, all sizes;				
Average - - - - -percent -	1.68	5.20	2.23	4.25
Range group 1 - - - - -	0.00 - 0.84	2.30 - 3.75	1.00 - 1.62	2.80 - 3.53
Range group 2 - - - - -	0.85 - 1.68	3.76 - 5.20	1.63 - 2.23	3.54 - 4.25
Range group 3 - - - - -	1.69 - 2.24	5.21 - 7.40	2.24 - 3.22	4.26 - 5.03
Range group 4 - - - - -	2.25 - 2.80	7.41 - 9.60	3.23 - 4.20	5.04 - 5.80

Table 4.--Upper and lower limits for each range group by traits and tests, 1967-68--Continued

Traits measured	Tests		
	New Hampshire	New Jersey	North Carolina
Income over feed and chick cost;			
Average - - - dol./hen housed -	2.761	0.694	0.926
Range group 1 - - - - -	3.160 - 2.960	1.150 - 0.922	1.290 - 1.108
Range group 2 - - - - -	2.959 - 2.761	0.921 - 0.694	1.107 - 0.926
Range group 3 - - - - -	2.760 - 2.465	0.693 - 0.472	0.925 - 0.693
Range group 4 - - - - -	2.464 - 2.170	0.471 - 0.250	0.692 - 0.460
Egg production;			
Average - - number/hen housed -	199.59	234.96	198.87
Range group 1 - - - - -	222.80 - 211.20	259.40 - 247.18	218.20 - 208.54
Range group 2 - - - - -	211.19 - 199.59	247.17 - 234.96	208.53 - 198.87
Range group 3 - - - - -	199.58 - 189.10	234.95 - 221.28	198.86 - 182.69
Range group 4 - - - - -	189.09 - 178.60	221.27 - 207.60	182.68 - 166.50
Age at 50 percent production;			
Average - - - - - days -	178.1	171.7	176.0
Range group 1 - - - - -	169.0 - 173.5	160.0 - 165.8	168.0 - 172.0
Range group 2 - - - - -	173.6 - 178.1	165.9 - 171.7	172.1 - 176.0
Range group 3 - - - - -	178.2 - 183.0	171.8 - 181.8	176.1 - 179.5
Range group 4 - - - - -	183.1 - 188.0	181.9 - 192.0	179.6 - 183.0
Growing mortality;			
Average - - - - - percent -	7.58	2.41	3.80
Range group 1 - - - - -	1.80 - 4.69	0.00 - 1.20	1.50 - 2.65
Range group 2 - - - - -	4.70 - 7.58	1.21 - 2.41	2.66 - 3.80
Range group 3 - - - - -	7.59 - 10.94	2.42 - 3.95	3.81 - 5.30
Range group 4 - - - - -	10.95 - 14.30	3.96 - 5.50	5.31 - 6.80
Laying mortality;			
Average - - - - - percent -	13.94	9.17	20.38
Range group 1 - - - - -	10.50 - 12.22	4.00 - 6.58	7.10 - 13.74
Range group 2 - - - - -	12.23 - 13.94	6.59 - 9.17	13.75 - 20.38
Range group 3 - - - - -	13.95 - 16.17	9.18 - 12.58	20.39 - 27.14
Range group 4 - - - - -	16.18 - 18.40	12.59 - 16.00	27.15 - 33.90
Egg weight;			
Average - - - - - ounces/dozen -	26.10	25.19	26.91
Range group 1 - - - - -	27.30 - 26.70	26.00 - 25.60	28.60 - 27.76
Range group 2 - - - - -	26.69 - 26.10	25.59 - 25.19	27.75 - 26.91
Range group 3 - - - - -	26.09 - 25.45	25.18 - 24.85	26.90 - 26.41
Range group 4 - - - - -	25.44 - 24.80	24.84 - 24.50	26.40 - 25.90
Large and extra large eggs;			
Average - - - - - percent -	80.86	64.20	89.19
Range group 1 - - - - -	91.80 - 86.33	72.90 - 68.55	94.50 - 91.84
Range group 2 - - - - -	86.32 - 80.86	68.54 - 64.20	91.83 - 89.19
Range group 3 - - - - -	80.85 - 74.63	64.19 - 60.35	89.18 - 86.09
Range group 4 - - - - -	74.62 - 68.40	60.34 - 56.50	86.08 - 83.00
Feed per pound of eggs;			
Average - - - - - pounds -	3.085	2.768	2.656
Range group 1 - - - - -	2.560 - 2.823	2.600 - 2.684	2.500 - 2.578
Range group 2 - - - - -	2.824 - 3.085	2.685 - 2.768	2.579 - 2.656
Range group 3 - - - - -	3.086 - 3.238	2.769 - 2.864	2.657 - 2.828
Range group 4 - - - - -	3.239 - 3.390	2.865 - 2.960	2.829 - 3.000
Albumen quality;			
Average - - - - - Haugh units -	67.79	82.45	79.38
Range group 1 - - - - -	71.30 - 69.54	87.50 - 84.98	84.20 - 81.79
Range group 2 - - - - -	69.53 - 67.79	84.97 - 82.45	81.78 - 79.38
Range group 3 - - - - -	67.78 - 64.74	82.44 - 81.18	79.37 - 77.44
Range group 4 - - - - -	64.73 - 61.70	81.17 - 79.90	77.43 - 75.50
Blood spots, all sizes;			
Average - - - - - percent -	5.00	2.12	3.70
Range group 1 - - - - -	0.70 - 2.85	0.00 - 1.06	1.40 - 2.55
Range group 2 - - - - -	2.86 - 5.00	1.07 - 2.12	2.56 - 3.70
Range group 3 - - - - -	5.01 - 7.40	2.13 - 3.11	3.71 - 5.00
Range group 4 - - - - -	7.41 - 9.80	3.12 - 4.10	5.01 - 6.30

Table 4. --Upper and lower limits for each range group by traits and tests, 1967-68--Continued

Traits measured	Tests			
	Minnesota	Missouri Cage	Missouri Floor	New Brunswick
Income over feed and chick cost;				
Average - - - - dol./hen housed -	1.689	1.845	1.766	2.419
Range group 1 - - - - -	2.150 - 1.920	2.700 - 2.272	2.610 - 2.188	3.090 - 2.754
Range group 2 - - - - -	1.919 - 1.689	2.271 - 1.845	2.187 - 1.766	2.753 - 2.419
Range group 3 - - - - -	1.688 - 1.435	1.844 - 1.437	1.765 - 1.338	2.418 - 1.944
Range group 4 - - - - -	1.434 - 1.180	1.436 - 1.030	1.337 - 0.910	1.943 - 1.470
Egg production;				
Average - - number/hen housed -	210.41	237.60	232.85	234.81
Range group 1 - - - - -	233.50 - 221.95	276.80 - 257.20	269.90 - 251.37	263.20 - 249.01
Range group 2 - - - - -	221.94 - 210.41	257.19 - 237.60	251.36 - 232.85	249.00 - 234.81
Range group 3 - - - - -	210.40 - 201.90	237.59 - 223.95	232.84 - 218.47	234.80 - 216.56
Range group 4 - - - - -	201.89 - 193.40	223.94 - 210.30	218.46 - 204.10	216.55 - 198.30
Age at 50 percent production;				
Average - - - - - days -	185.5	181.6	169.3	165.9
Range group 1 - - - - -	171.0 - 178.2	175.0 - 178.3	156.0 - 162.6	158.0 - 161.9
Range group 2 - - - - -	178.3 - 185.5	178.4 - 181.6	162.7 - 169.3	162.0 - 165.9
Range group 3 - - - - -	185.6 - 194.2	181.7 - 185.3	169.4 - 174.6	166.0 - 167.9
Range group 4 - - - - -	194.3 - 203.0	185.4 - 189.0	174.7 - 180.0	168.0 - 170.0
Growing mortality;				
Average - - - - - percent -	3.75	3.09	2.53	0.54
Range group 1 - - - - -	1.80 - 2.78	1.00 - 2.04	0.00 - 1.27	0.00 - 0.27
Range group 2 - - - - -	2.79 - 3.75	2.05 - 3.09	1.28 - 2.53	0.28 - 0.54
Range group 3 - - - - -	3.76 - 6.88	3.10 - 4.69	2.54 - 6.22	0.55 - 0.92
Range group 4 - - - - -	6.89 - 10.00	4.70 - 6.30	6.23 - 9.90	0.93 - 1.30
Laying mortality;				
Average - - - - - percent -	11.23	15.56	8.48	7.00
Range group 1 - - - - -	6.60 - 8.92	7.10 - 11.33	2.00 - 5.24	2.70 - 4.85
Range group 2 - - - - -	8.93 - 11.23	11.34 - 15.56	5.25 - 8.48	4.86 - 7.00
Range group 3 - - - - -	11.24 - 13.42	15.57 - 21.73	8.49 - 13.24	7.01 - 8.85
Range group 4 - - - - -	13.43 - 15.60	21.74 - 27.90	13.25 - 18.00	8.86 - 10.70
Egg weight;				
Average - - - - ounces/dozen -	25.34	26.08	25.13	26.10
Range group 1 - - - - -	26.90 - 26.12	27.30 - 26.69	27.30 - 26.21	27.70 - 26.90
Range group 2 - - - - -	26.11 - 25.34	26.68 - 26.08	26.20 - 25.13	26.89 - 26.10
Range group 3 - - - - -	25.33 - 25.02	26.07 - 25.29	25.12 - 24.26	26.09 - 25.35
Range group 4 - - - - -	25.01 - 24.70	25.28 - 24.50	24.25 - 23.40	25.34 - 24.60
Large and extra large eggs;				
Average - - - - - percent -	84.32	89.01	82.31	72.71
Range group 1 - - - - -	91.50 - 87.91	95.60 - 92.30	94.00 - 88.15	86.90 - 79.81
Range group 2 - - - - -	87.90 - 84.32	92.29 - 89.01	88.14 - 82.31	79.80 - 72.71
Range group 3 - - - - -	84.31 - 82.06	89.00 - 82.00	82.30 - 74.50	72.70 - 63.61
Range group 4 - - - - -	82.05 - 79.80	81.99 - 75.00	74.49 - 66.70	63.60 - 54.50
Feed per pound of eggs;				
Average - - - - - pounds -	3.078	2.718	2.804	2.761
Range group 1 - - - - -	2.710 - 2.894	2.280 - 2.499	2.420 - 2.612	2.390 - 2.576
Range group 2 - - - - -	2.895 - 3.078	2.500 - 2.718	2.613 - 2.804	2.577 - 2.761
Range group 3 - - - - -	3.079 - 3.294	2.719 - 2.924	2.805 - 3.082	2.762 - 3.071
Range group 4 - - - - -	3.295 - 3.510	2.925 - 3.130	3.083 - 3.360	3.072 - 3.380
Albumen quality;				
Average - - - - - Haugh units -	85.68	76.52	77.24	59.69
Range group 1 - - - - -	88.50 - 87.09	81.60 - 79.06	82.30 - 79.77	62.80 - 61.24
Range group 2 - - - - -	87.08 - 85.68	79.05 - 76.52	79.76 - 77.24	61.23 - 59.69
Range group 3 - - - - -	85.67 - 83.14	76.51 - 74.21	77.23 - 75.17	59.68 - 57.89
Range group 4 - - - - -	83.13 - 80.60	74.20 - 71.90	75.16 - 73.10	57.88 - 56.10
Blood spots, all sizes;				
Average - - - - - percent -	4.64	5.75	4.51	4.29
Range group 1 - - - - -	1.40 - 3.02	2.40 - 4.08	1.90 - 3.20	2.40 - 3.34
Range group 2 - - - - -	3.03 - 4.64	4.09 - 5.75	3.21 - 4.51	3.35 - 4.29
Range group 3 - - - - -	4.65 - 8.87	5.76 - 8.98	4.52 - 6.20	4.30 - 6.04
Range group 4 - - - - -	8.88 - 13.10	8.99 - 12.20	6.21 - 7.90	6.05 - 7.80

Table 4. --Upper and lower limits for each range group by traits and tests, 1967-68-- Continued

Traits measured	Tests		
	Pennsylvania	Tennessee	Texas
Income over feed and chick cost;			
Average - - - - - dol./hen housed -	2.430	1.488	1.474
Range group 1 - - - - -	3.040 - 2.735	2.070 - 1.779	1.850 - 1.662
Range group 2 - - - - -	2.734 - 2.430	1.778 - 1.488	1.661 - 1.474
Range group 3 - - - - -	2.429 - 2.040	1.487 - 0.854	1.473 - 1.122
Range group 4 - - - - -	2.039 - 1.650	0.853 - 0.220	1.121 - 0.770
Egg production;			
Average - - - - - number/hen housed -	255.18	198.98	216.85
Range group 1 - - - - -	280.40 - 267.79	231.40 - 215.19	235.90 - 226.38
Range group 2 - - - - -	267.78 - 255.18	215.18 - 198.98	226.37 - 216.85
Range group 3 - - - - -	255.17 - 243.29	198.97 - 173.14	216.84 - 204.03
Range group 4 - - - - -	243.28 - 231.40	173.13 - 147.30	204.02 - 191.20
Age at 50 percent production			
Average - - - - - days -	174.8	172.4	172.1
Range group 1 - - - - -	161.0 - 167.9	161.0 - 166.7	163.0 - 167.6
Range group 2 - - - - -	168.0 - 174.8	166.8 - 172.4	167.7 - 172.1
Range group 3 - - - - -	174.9 - 182.9	172.5 - 178.2	172.2 - 178.1
Range group 4 - - - - -	183.0 - 191.0	178.3 - 184.0	178.2 - 184.0
Growing mortality;			
Average - - - - - percent -	1.97	16.94	3.20
Range group 1 - - - - -	0.00 - 0.98	7.40 - 12.17	1.00 - 2.10
Range group 2 - - - - -	0.99 - 1.97	12.18 - 16.94	2.11 - 3.20
Range group 3 - - - - -	1.98 - 3.98	16.95 - 22.77	2.21 - 4.70
Range group 4 - - - - -	3.99 - 6.00	22.78 - 28.60	4.71 - 6.20
Laying mortality;			
Average - - - - - percent -	3.86	27.07	10.49
Range group 1 - - - - -	0.00 - 1.93	12.20 - 19.63	7.30 - 8.89
Range group 2 - - - - -	1.94 - 3.86	19.64 - 27.07	8.90 - 10.49
Range group 3 - - - - -	3.87 - 7.93	27.08 - 36.88	10.50 - 13.84
Range group 4 - - - - -	7.94 - 12.00	36.89 - 46.70	13.85 - 17.20
Egg weight;			
Average - - - - - ounces/dozen -	25.38	25.46	24.84
Range group 1 - - - - -	27.30 - 26.34	26.20 - 25.83	26.10 - 25.47
Range group 2 - - - - -	26.33 - 25.38	25.82 - 25.46	25.46 - 24.84
Range group 3 - - - - -	25.37 - 24.74	25.45 - 24.73	24.83 - 24.12
Range group 4 - - - - -	24.73 - 24.10	24.72 - 24.00	24.11 - 23.40
Large and extra large eggs;			
Average - - - - - percent -	74.97	75.36	68.07
Range group 1 - - - - -	89.60 - 82.28	85.70 - 80.53	79.20 - 73.64
Range group 2 - - - - -	82.27 - 74.97	80.52 - 75.36	73.63 - 68.07
Range group 3 - - - - -	74.96 - 68.78	75.35 - 65.28	68.06 - 58.69
Range group 4 - - - - -	68.77 - 62.60	65.27 - 55.20	58.68 - 49.30
Feed per pound of eggs;			
Average - - - - - pounds -	2.707	2.706	2.616
Range group 1 - - - - -	2.440 - 2.574	2.400 - 2.553	2.390 - 2.503
Range group 2 - - - - -	2.575 - 2.707	2.554 - 2.706	2.504 - 2.616
Range group 3 - - - - -	2.708 - 2.884	2.707 - 2.998	2.617 - 2.833
Range group 4 - - - - -	2.885 - 3.060	2.999 - 3.290	2.834 - 3.050
Albumen quality;			
Average - - - - - Haugh units -	76.60	73.92	80.75
Range group 1 - - - - -	82.10 - 79.35	79.50 - 76.71	84.50 - 82.63
Range group 2 - - - - -	79.34 - 76.60	76.70 - 73.92	82.62 - 80.75
Range group 3 - - - - -	76.59 - 73.25	73.91 - 70.91	80.74 - 78.18
Range group 4 - - - - -	73.24 - 69.90	70.90 - 67.90	78.17 - 75.60
Blood spots, all sizes;			
Average - - - - - percent -	3.48	4.74	2.66
Range group 1 - - - - -	0.40 - 1.94	1.10 - 2.92	1.70 - 2.18
Range group 2 - - - - -	1.95 - 3.48	2.93 - 4.74	2.19 - 2.66
Range group 3 - - - - -	3.49 - 5.94	4.75 - 8.62	2.67 - 3.53
Range group 4 - - - - -	5.95 - 8.40	8.63 - 12.50	3.53 - 4.40

Table 5.--Range group ranking for stock entered in 1967-68 random sample egg production tests

ENTRY IDENTIFICATION		TEST	BREEDING	STRAIN OR TRADENAME	INCOME OVER FEED COST (\$)	EGG PRO- DUCTION (Hen housed)	AGE AT 50% PRO- DUCTION (Days)	GROWING MORTALITY (%)	LAYING MORTALITY (%)	EGG WEIGHT (oz)	LARGE AND EXTRA LARGE EGGS (%)	FEED PER EGG POUND OF EGGS (lbs)	ALBUMEN QUALITY (H.U.)	BLOOD SPOTS (%)
Andrews, J. J., R.R. #3, Chilliwack, British Columbia														
Andrews, B.C.-----		C.C.	WL	SX	Andrews B 31-----	3	3	1	3	3	3	2	4	2
Animal Research Institute, Ottawa, Ontario														
A.R.I., Ont.-----		B.C.	WL	PS	Kentville R.B.C. --	4	3	3	1	2	3	4	4	4
A.R.I., Ont.-----		C.C.	WL	PS	Kentville R.B.C. --	3	3	1	2	3	3	3	3	4
A.R.I., Ont.-----		N.B.	WL	PS	Kentville R.B.C. --	4	3	4	2	4	4	2	1	4
Anthony, Geo. M. & Sons, Strausstown, Pennsylvania														
Anthony, Pa.-----		Mo.-C.	WL	SX	Anthony-----	3	4	3	2	2	2	3	1	2
Anthony, Pa.-----		Mo.-F.	WL	SX	Anthony-----	2	3	2	4	3	3	2	1	2
Anthony, Pa.-----		N.J.	WL	SX	Anthony-----	4	4	3	1	4	4	3	2	1
Anthony, Pa.-----		Pa.	WL	SX	Anthony-----	2	2	3	3	3	4	2	2	2
Anthony, Pa.-----		Tenn.	WL	SX	Anthony-----	3	2	3	1	3	2	3	1	3
Babcock Poultry Farm, Inc., Ithaca, New York														
Babcock, N.Y. (Western, B.C.)-----		B.C.	WL	SX	Babcock B-300 ----	1	1	2	1	1	1	1	4	3
Babcock, N.Y. (Malletts, Ont., Stewart, Alta.)		C.C.	WL	SX	Babcock B-300 ----	2	1	1	3	2	2	2	3	2
Babcock, N.Y. (Gulf Coast, Hodges, Fla.)		Fla.	WL	SX	Babcock B-300 ----	1	1	1	2	2	2	2	3	4
Babcock, N.Y. (Allstate, Minn.)		Minn.	WL	SX	Babcock B-300 ----	1	1	1	2	2	4	1	4	2
Babcock, N.Y.-----		Mo.-C.	WL	SX	Babcock B-300 ----	2	2	1	3	2	3	2	3	2
Babcock, N.Y. (Ballew, Mo.)-----		Mo.-F.	WL	SX	Babcock B-300 ----	1	1	2	3	3	2	1	3	1
Babcock, N.Y. (Burpee, N.B.)-----		N.B.	WL	SX	Babcock B-300 ----	1	1	1	3	1	3	1	2	3
Babcock, N.Y.-----		N.H.	WL	SX	Babcock B-300 ----	1	1	1	4	4	4	1	2	2
Babcock, N.Y. (Babcock, Pa.)-----		N.J.	WL	SX	Babcock B-300 ----	2	1	2	3	2	2	2	4	4
Babcock, N.Y. (Harrolds, Ga.)-----		N.C.	WL	SX	Babcock B-300 ----	1	2	1	3	3	4	1	4	3
Babcock, N.Y. (Babcock, Pa.)-----		Pa.	WL	SX	Babcock B-300 ----	1	1	1	2	1	3	1	3	2
Babcock, N.Y. (Riverside, Tenn.)-----		Tenn.	WL	SX	Babcock B-300 ----	2	1	3	3	3	3	1	3	2
Babcock, N.Y. (Texas hatcheries)-----		Texas	WL	SX	Babcock B-300 ----	1	1	1	2	3	3	1	3	3
Babcock Poultry Farm, Inc., Ithaca, New York														
Babcock, N.Y.-----		Mo.-C.	WL	SX	Babcock B-310 ----	2	3	2	2	3	2	2	3	2
Babcock Poultry Farm, Inc., Ithaca, New York														
Babcock, N.Y. (Anderson's, Iowa)-----		Mo.-F.	RIR x BPR	BX	Babcock B-390 ----	3	2	2	1	2	2	3	3	3
Babcock, N.Y. (Burpee, N.B.)-----		N.B.	RIR x BPR	BX	Babcock B-390 ----	3	3	4	4	1	2	3	2	2
Babcock, N.Y.-----		N.H.	RIR x BPR	BX	Babcock B-390 ----	3	3	3	2	2	2	4	3	4
Babcock, N.Y.-----		Pa.	RIR x BPR	BX	Babcock B-390 ----	4	3	2	2	1	2	1	3	3

Table 5.--Range group ranking for stock entered in 1967-68 random sample egg production tests--Continued

ENTRY IDENTIFICATION	TEST	BREEDING	STRAIN OR TRADENAME	INCOME OVER FEED COST (\$)	EGG PRO- DUCTION (No.)	AGE AT 50% PRO- DUCTION (Days)	GROWING MORTALITY (%)	LAYING MORTALITY (%)	Egg WEIGHT (g)	LARGE AND EXTRA LARGE (%)	FEED PER EGG (lb)	ALBUMEN QUALITY (H.U.)	BLOOD SPOTS (%)
Brender's Leghorns, Ferndale, New York													
Brender's, N.Y.	Minn.	WL	Money Maker	4	4	3	3	3	4	4	4	2	2
Brender's, N.Y.	Mo.-F.	WL	Money Maker	2	3	3	1	2	3	3	3	3	1
Brender's, N.Y.	N.J.	WL	Money Maker	2	3	4	3	1	3	2	3	4	4
Burling Hatchery, Oxford, Pennsylvania													
Burling, Pa.	Pa.	RIR x WPR BX	Golden Tri-Cross	3	3	3	4	3	2	2	4	3	4
Cameron Leghorn Res. Farm, Beaver Springs, Pennsylvania													
Cameron, Pa.	Mo.-F.	WL	Cameron #924	3	2	3	1	2	2	2	3	2	2
Cameron, Pa.	Pa.	WL	Cameron #924	2	2	3	4	2	3	3	3	2	2
Cameron, Pa.	Tenn.	WL	Cameron #924	2	2	3	3	2	3	2	3	3	2
Carey Farms, Marion, Ohio													
Carey, Ohio	Mo.-F.	CG x WL	Carey New Spots	2	2	3	2	3	3	3	2	4	3
Carey, Ohio	Pa.	CG x WL	Carey New Spots	3	3	2	3	3	4	4	2	4	1
Carey, Ohio	Tenn.	CG x WL	Carey New Spots	2	2	3	3	1	3	2	2	4	1
Cashman Leghorn Farms, Webster, Kentucky													
Tharp, Ark. (Cashman, Ky.)	Mo.-C.	Syn. x WL	Cashman Astronauts	3	3	4	2	2	1	1	3	4	3
Cashman, Ky. (Minn. Ser. Hat., Minn.)	Mo.-F.	Syn. x WL	Cashman Astronauts	3	3	3	3	4	3	3	3	4	3
Cashman Leghorn Farms, Webster, Kentucky													
Cashman, Ky.	Fla.	WL	Cashman Hi-Cash	3	4	4	1	4	3	3	3	3	4
Tharp, Ark. (Cashman, Ky.)	Mo.-C.	WL	Cashman Hi-Cash	1	1	3	1	2	2	2	2	3	3
Cashman, Ky. (Lindstrom, Mo.)	Mo.-F.	WL	Cashman Hi-Cash	3	4	4	1	3	3	3	3	2	4
Cashman, Ky.	N.J.	WL	Cashman Hi-Cash	4	4	4	2	3	2	1	4	4	2
Cashman, Ky.	N.C.	WL	Cashman Hi-Cash	2	3	4	3	2	3	2	3	2	3
Cashman, Ky.	Pa.	WL	Cashman Hi-Cash	3	4	4	3	2	2	3	3	3	2
Cashman, Ky.	Tenn.	WL	Cashman Hi-Cash	3	3	3	2	3	2	2	3	2	3
Clark's Poultry Farm, Brandon, Manitoba													
Clark's, Man. (Fairway, Sask.)	C.C. RIR (LS x RIR) BX		Paymaster 101	3	3	2	3	2	3	3	4	3	3
Colonial Poultry Farms, Pleasant Hill, Missouri													
Colonial, Mo.	Fla.	WL	True-Line 365 B	2	2	1	2	2	3	3	2	3	3
Colonial, Mo.	Mo.-C.	WL	True-Line 365 B	2	2	1	1	3	3	3	2	2	2
Colonial, Mo. (Colonial, Clinton, Mo.)	Mo.-F.	WL	True-Line 365 B	2	2	1	1	2	3	3	2	2	3
Colonial, Mo.	N.H.	WL	True-Line 365 B	2	2	1	3	4	4	4	1	3	1
Colonial, Mo. (Colonial, Ala.)	N.C.	WL	True-Line 365 B	3	3	2	3	3	4	4	2	3	3
Colonial, Mo.	Pa.	WL	True-Line 365 B	1	1	1	3	1	3	4	2	3	3

Table 5.--Range group ranking for stock entered in 1967-68 random sample egg production tests--Continued

ENTRY IDENTIFICATION		TEST	BREEDING	STRAIN OR TRADENAME	INCOME OVER FEED AND CHICK COST (\$)	EGG PRO- DUCTION (No.)	AGE AT 50% PRO- DUCTION (Days)	GROWING MORTALITY (%)	LAYING MORTALITY (%)	EGG WEIGHT (oz)	LARGE AND EXTRA LARGE EGGS (%)	FEED PER EGG POUND OF EGGS (lbs)	ALBUMEN QUALITY (H.U.)	BLOOD SPOTS (%)
Colonial Poultry Farms, Pleasant Hill, Missouri														
Colonial, Mo. (Colonial, Minn.)	-----	Minn.	---	INX	True-Line 365 H---	2	1	3	4	4	4	2	3	3
Colonial, Mo. (Colonial Res. Fm., Mo.)	-----	Mo.-F.	---	INX	True-Line 365 H---	2	3	1	1	3	3	2	3	2
Colonial, Mo.	-----	Tenn.	---	INX	True-Line 365 H---	3	3	3	3	3	3	3	2	3
Colonial, Mo.	-----	Texas	---	INX	True-Line 365 H---	3	3	3	2	3	3	3	2	1
Davis, Joe K., Hatchery, Earl, North Carolina	-----	Mo.-F.	RIR x BPR	BX	Davis Combiner ---	4	3	3	1	1	1	4	4	4
Davis, N.C.	-----	N.H.	RIR x BPR	BX	Davis Combiner ---	3	3	1	1	1	3	4	3	2
Davis, N.C.	-----	N.C.	RIR x BPR	BX	Davis Combiner ---	2	3	1	1	1	1	4	3	2
Davis, Joe K., Hatchery, Earl, North Carolina	-----	Minn.	RIR	SX	Davis Red-----	4	3	3	2	2	1	4	2	4
Davis, N.C.	-----	Mo.-F.	RIR	SX	Davis Red-----	2	3	3	1	2	2	3	4	3
Davis, N.C.	-----	N.C.	RIR	SX	Davis Red-----	4	2	4	2	1	2	4	3	2
Davis, N.C.	-----	Tenn.	RIR	SX	Davis Red-----	3	4	2	1	1	1	3	2	4
Demler Farms, Inc., Anaheim, California	-----	B.C.	WL	SX	Demler D-65-----	2	4	2	1	1	1	3	3	1
Demler, Calif. (Suderman, B.C.)	-----	Mo.-F.	WL	SX	Demler D-65-----	2	2	4	1	3	3	3	2	1
Demler, Calif.	-----	N.J.	WL	SX	Demler D-65-----	4	3	3	4	2	4	4	3	1
Demler, Calif.	-----	Texas	WL	SX	Demler D-65-----	2	3	1	1	3	2	3	2	2
deZeeuw Leghorn Breeder, South Edmonton, Alberta	-----	C.C.	WL	SX	deZeeuw 752 -----	4	4	3	3	3	3	3	3	3
Erath Egg Farm, Stephenville, Texas	-----	Texas	WL	SX	Erath Chicana-----	4	4	4	2	3	2	3	2	4
Fisher Poultry Farm, Ltd., Ayton, Ontario	-----	B.C.	WL	SX	Fisher 105-----	3	1	1	3	1	2	1	1	1
Fisher, Ont.	-----	C.C.	WL	SX	Fisher 105-----	1	1	2	1	2	2	1	1	1
Garber Poultry Breeding Farm, Modesto, California	-----	B.C.	WL	SX	Garber G 200-----	4	4	4	4	2	2	3	1	1
Garber, Calif. (Redline, B.C.)	-----	Fla.	WL	SX	Garber G 200-----	2	3	1	2	2	1	3	1	1
Garber, Calif. (Orange Blossom, Fla.)	-----	Minn.	WL	SX	Garber G 200-----	3	3	3	3	4	3	2	1	4
Garber, Calif. (Fairfax, Minn.)	-----	Mo.-F.	WL	SX	Garber G 200-----	2	2	2	3	3	3	2	1	1
Garber, Calif.	-----	N.J.	WL	SX	Garber G 200-----	3	2	2	4	4	4	2	2	1
Garber, Calif. (Dan Herson, N.J.)	-----	Pa.	WL	SX	Garber G 200-----	2	2	1	3	2	2	2	1	1
Garber, Calif.	-----	Texas	WL	SX	Garber G 200-----	3	3	2	2	3	3	3	1	1

Table 5. --Range group ranking for stock entered in 1967-68 random sample egg production tests--Continued

ENTRY IDENTIFICATION		TEST	BREEDING	STRAIN OR TRADENAME	INCOME OVER FEED DST CHICK (\$)	EGG PRO- DUCTION (Hen housed)	AGE AT 50% PRO- DUCTION (Days)	GROWING MORTALITY (%)	LAYING MORTALITY (%)	EGG WEIGHT (oz)	LARGE AND EXTRA LARGE EGGS (%)	FEED PER POUND OF EGGS (lbs)	ALBUMEN QUALITY (H.U.)	BLOOD SPOTS (%)
Garber Poultry Breeding Farm, Modesto California														
Garber, Calif.	Mo.-F.	CGxWL BX	CGxWL BX	Garber G x 291	2	2	1	3	2	2	2	2	3	1
Garber, Calif. (Davis, N.C.)	N.C.	CGxWL BX	CGxWL BX	Garber G x 291	3	4	2	4	4	3	3	3	2	2
Garber, Calif.	Pa.	CGxWL BX	CGxWL BX	Garber G x 291	3	3	2	2	3	3	3	3	3	1
Garber, Calif.	Tenn.	CGxWL BX	CGxWL BX	Garber G x 291	2	2	1	1	2	3	3	3	3	2
Garrison, Earl W., Bridgeton, New Jersey	N.H.	RIR x WPR BX	RIR x WPR BX	Golden Sex Link	3	3	2	4	4	2	2	4	1	3
Garrison, N.J.	Pa.	RIR x WPR BX	RIR x WPR BX	Golden Sex Link	4	4	3	4	4	2	1	4	2	4
Ghostley's Poultry Farm, Inc., Anoka, Minnesota	Minn.	WL	WL	Ghostley Pearl 63	3	3	1	1	4	3	3	2	1	1
Ghostley, Minn.	N.J.	WL	WL	Ghostley Pearl 63	2	2	1	2	3	2	2	1	1	3
Ghostley, Minn.	Tenn.	WL	WL	Ghostley Pearl 63	2	2	1	1	3	1	2	1	1	1
Ghostley, Minn.	Texas	WL	WL	Ghostley Pearl 63	1	1	1	3	3	2	2	1	1	4
Ghostley's Poultry Farm, Inc., Anoka, Minnesota	Pa.	WL	WL	Ghostley Cage Queen	2	2	1	2	4	3	3	3	1	1
Hansen's Leghorn City, Puyallup, Washington	Mo.-F.	WL	WL	Criss Cross H 25	3	4	4	1	4	3	3	3	2	2
Hansen's, Wash.	Mo.-F.	WL	WL	Criss Cross H 25	3	4	4	1	4	3	3	3	2	2
Massachusetts														
Harco, Mass.	Mo.-F.	RIR x BPR BX	RIR x BPR BX	Harco Sex Link	3	2	2	2	2	1	1	3	3	4
Harco, Mass.	N.B.	RIR x BPR BX	RIR x BPR BX	Harco Sex Link	2	3	4	2	4	1	1	3	1	3
Harco, Mass.	N.H.	RIR x BPR BX	RIR x BPR BX	Harco Sex Link	1	2	3	2	2	1	1	2	1	3
Harco, Mass.	Pa.	RIR x BPR BX	RIR x BPR BX	Harco Sex Link	3	2	3	3	3	1	1	3	2	4
Hardy, C. Nelson & Sons, Essex, Massachusetts	N.H.	RIR x BPR BX	RIR x BPR BX	Deluxe Sex Link	3	4	3	1	2	2	1	4	2	4
Hardy, Mass.	N.H.	RIR x BPR BX	RIR x BPR BX	Deluxe Sex Link	3	4	3	1	2	2	1	4	2	4
Heisdorf & Nelson Farms, Redmond, Washington	H & N, Wash. (Oak Crest, Pine Acres, Fla.)	WL	WL	H & N Nick Chick	2	2	3	2	1	2	2	2	2	2
H & N, Wash. (Castlebury, N.C.)	N.C.	WL	WL	H & N Nick Chick	1	3	3	2	3	4	3	1	1	2
Honegger Breeder Hatchery, Forrest, Illinois	B.C.	WL	WL	Honegger Layer	3	2	3	1	2	2	2	3	2	3
Honegger, Ill. (Steinbach, Man., Durance, Ont.)	C.C.	WL	WL	Honegger Layer	2	2	1	1	2	4	4	2	2	3
Honegger, Ill. (Browder's, Pine Air, Fla.)	Fla.	WL	WL	Honegger Layer	2	2	3	1	3	3	3	2	2	1
Honegger, Ill.	Mo.-F.	WL	WL	Honegger Layer	3	3	2	3	4	3	3	2	2	1
Honegger, Ill.	N.H.	WL	WL	Honegger Layer	3	2	2	3	3	3	3	2	3	2
Honegger, Ill. (Fred Haley, Ga.)	N.C.	WL	WL	Honegger Layer	2	3	2	2	3	3	3	2	2	3

Table 5.--Range group ranking for stock entered in 1967-68 random sample egg production tests--Continued

ENTRY IDENTIFICATION	TEST	BREEDING	STRAIN OR TRADENAME	INCOME OVER FEED AND CHICK COST (\$)	EGG PRO- DUCTION (Hen housed)	AGE AT 50% PRO- DUCTION (Days)	GROWING MORTALITY (%)	LAYING MORTALITY (%)	EGG WEIGHT (oz)	LARGE AND EXTRA LARGE EGGS (%)	FEED PER EGG (lbs)	ALBUMEN QUALITY (H.U.)	BLOOD SPOTS (%)
Hubbard Farms, Inc., Walpole, New Hampshire													
Hubbard, N.H.	N.H.	Syn. x NH BX	Golden Comet	1	2	2	2	3	1	1	2	1	2
Hubbard, N.H. (Hubbard, N.C.)	N.C.	Syn. x NH BX	Golden Comet	4	3	2	1	2	1	1	3	2	1
Hubbard, N.H.	Pa.	Syn. x NH BX	Golden Comet	2	3	2	1	3	1	1	2	3	4
Hy-Line Poultry Farm, Des Moines, Iowa													
Rothway, Ariz.	Ariz.	---	Hy-Line 934	4	4	4	4	4	1	1	3	4	4
Hy-Line, Iowa	Mo.-F.	---	Hy-Line 934	1	1	2	1	1	2	2	1	4	1
Hy-Line, Iowa (Tar Heel, N.C.)	N.C.	---	Hy-Line 934	1	2	3	1	2	3	2	1	4	2
Hy-Line, Iowa (Blanton Smith, Tenn.)	Tenn.	---	Hy-Line 934	1	2	3	2	2	1	1	1	4	2
Hy-Line Poultry Farm, Des Moines, Iowa													
Rothway, Ariz.	Ariz.	---	Hy-Line 934-E	3	3	4	1	2	1	1	2	4	2
Hy-Line, Iowa (Hy-Line, Ont., Woodman, Alta.)	C.C.	---	Hy-Line 934-E	2	1	3	2	1	1	1	1	4	1
Hy-Line, Iowa (Wallace, Fla.)	Fla.	---	Hy-Line 934-E	1	2	1	1	2	1	1	1	4	1
Hy-Line, Iowa (Tar Heel, N.C.)	N.C.	---	Hy-Line 934-E	2	2	3	1	3	1	1	1	4	2
Hy-Lay, Texas	Texas	---	Hy-Line 934-E	2	3	3	3	2	1	1	1	4	4
Hy-Line Poultry Farm, Des Moines, Iowa													
Hy-Line, Iowa (Hy-Line, Minn.)	Minn.	---	Hy-Line 938	1	1	1	1	2	1	2	1	4	2
Hy-Line, Iowa	Mo.-C.	---	Hy-Line 938	1	1	1	2	1	2	2	1	4	1
Hy-Line, Iowa	Mo.-F.	---	Hy-Line 938	2	2	3	1	2	2	2	2	4	1
Hy-Line, Ont.	N.B.	---	Hy-Line 938	1	2	2	2	4	2	2	1	4	1
Hy-Line, Iowa	N.H.	---	Hy-Line 938	1	1	2	3	2	3	2	1	4	1
Hy-Line, Iowa (Blanton Smith, Tenn.)	Tenn.	---	Hy-Line 938	2	3	3	3	3	1	1	1	4	1
Johnson's, Texas (Hy-Line, Iowa)	Texas	---	Hy-Line 938	1	1	2	3	1	1	1	1	4	1
Kazmeier, Texas	Texas	---	Hy-Line 938	3	3	2	1	3	1	1	2	4	2
Ideal Poultry Breeding Farm, Inc., Cameron, Texas													
Ideal, Texas	Mo.-C.	Syn. x WL BX	Ideal 236	3	3	3	1	4	1	1	3	3	3
Ideal, Texas	Mo.-F.	Syn. x WL BX	Ideal 236	1	1	2	1	1	2	2	1	4	1
Ideal, Texas	N.J.	Syn. x WL BX	Ideal 236	2	1	2	2	1	4	4	1	4	3
Ideal, Texas	N.C.	Syn. x WL BX	Ideal 236	1	1	2	2	2	3	2	2	4	2
Ideal, Texas	Pa.	Syn. x WL BX	Ideal 236	1	2	1	3	1	3	3	1	4	1
Ideal, Texas	Tenn.	Syn. x WL BX	Ideal 236	1	1	1	1	1	3	3	2	3	1
Ideal, Texas	Texas	Syn. x WL BX	Ideal 236	2	2	2	3	1	3	2	2	3	2

Table 5. --Range group ranking for stock entered in 1967-68 random sample egg production tests--Continued

ENTRY IDENTIFICATION		TEST	BREEDING	STRAIN OR TRADENAME	INCOME OVER FEE AND CHICK COST (\$)	EGG PRO- DUCTION (Hen housed)	AGE AT 50% PRO- DUCTION (Days)	GROWING MORTALITY (%)	LAYING MORTALITY (%)	EGG WEIGHT (oz)	LARGE AND EXTRA LARGE EGGS (%)	FEED PER POUND OF EGGS (lbs)	ALBUMEN QUALITY (H.U.)	BLOOD SPOTS (%)
Indiana Farm Bureau Coop., Indianapolis, Indiana														
Ind. Farm Bur., Ind. (Land O' Lakes, Minn.)		Minn.	WL	SX	Princess 55	4	4	4	3	4	3	3	1	2
Ind. Farm Bur., Ind. (Land O' Lakes, Minn.)		Minn.	WL	SX	Princess 55	2	4	3	2	3	2	2	1	2
Ind. Farm Bur., Ind. (Research Farm, Ind.)		Mo.-C.	WL	SX	Princess 55	2	3	3	3	3	2	1	1	1
Ind. Farm Bur., Ind. (Research Farm, Ind.)		N.C.	WL	SX	Princess 55	4	4	2	3	2	3	2	1	1
Indiana Farm Bureau Coop., Indianapolis, Indiana														
Ind. Farm Bur., Ind. (Land O' Lakes, Minn.)		Pa.	WL	SX	Duchess 60	2	3	2	1	3	3	1	1	2
Kimber Farms, Inc., Fremont, California														
Arizona State, Ariz.		Ariz.	WL	SX	Kimber K 137	1	1	2	3	2	2	1	1	3
Kimber, Calif. (Scott, Ont.)		C.C.	WL	SX	Kimber K 137	2	2	2	1	3	3	2	1	1
Kimber, Calif. (Fla. State, Miami Int., Fla.)		Fla.	WL	SX	Kimber K 137	3	2	2	3	3	3	1	1	2
Rapp, N.J.		N.J.	WL	SX	Kimber K 137	1	1	2	1	4	4	1	1	2
Kimber, Calif. (Hubbard, N.C.)		N.C.	WL	SX	Kimber K 137	2	2	1	2	4	4	2	1	3
Kimber, Calif. (Hubbard, Pa.)		Pa.	WL	SX	Kimber K 137	1	1	2	1	4	4	1	1	2
Kimber Farms, Inc., Fremont, California														
Kimber, Calif. (StarKimber, B.C.)		B.C.	WL	SX	Kimber K 141	2	3	4	4	3	1	1	1	2
Kimber, Calif. (Mo. Valley, Mo.)		Mo.-F.	WL	SX	Kimber K 141	3	3	2	3	3	3	1	2	4
Kimber, Calif.		N.C.	WL	SX	Kimber K 141	4	4	4	4	4	4	3	3	4
Kimber, Calif.		Pa.	WL	SX	Kimber K 141	3	2	3	3	3	2	2	2	2
Kimber Farms, Inc., Fremont, California														
Arizona State, Ariz.		Ariz.	WL	SX	Kimber K 155	1	1	2	1	3	3	1	1	3
Kimber, Calif. (Trettin, Iowa)		Mo.-F.	WL	SX	Kimber K 155	2	2	2	3	3	3	2	1	2
Lawton, A.C. & Sons, Foxboro, Massachusetts														
Lawton, Mass.		Mo.-C. RIR x WPR	BX		Buff Sex Link	4	3	4	1	1	1	4	2	4
Lawton, Mass.		Mo.-F. RIR x WPR	BX		Buff Sex Link	3	2	1	1	1	1	4	3	4
Lawton, Mass.		N.H. RIR x WPR	BX		Buff Sex Link	4	3	2	2	1	1	4	2	3
Lawton, Mass.		Pa. RIR x WPR	BX		Buff Sex Link	4	3	1	3	1	1	4	3	4
Mettling's Hatchery, Slayton, Minnesota														
Mettling's, Minn.		Minn.	CGx WL	BX	Cal-Lyne	2	2	1	3	2	3	2	3	2
Nelson, George F., Truro, Nova Scotia														
Nelson, N.S.		C.C. RIR (LSxRIR)	BX		Sex Link	4	3	2	3	1	1	4	2	4
Nelson, N.S.		N.B. RIR (LSxRIR)	BX		Sex Link	4	4	2	4	3	3	4	2	2

Table 5.---Range group ranking for stock entered in 1967-68 random sample egg production tests--Continued

ENTRY IDENTIFICATION		TEST	BREEDING	STRAIN OR TRADENAME	INCOME OVER FEED AND CHICK COST (\$)	EGG PRO- DUCTION (Hen housed)	AGE AT 50% PRO- DUCTION (Days)	GROWING MORTALITY (%)	LAYING MORTALITY (%)	EGG WEIGHT (oz)	LARGE AND EXTRA LARGE EGGS (%)	FEED POUND PER EGG (lbs)	ALBUMEN QUALITY (H.U.)	BLOOD SPOTS (%)
North Central Regional Poultry Br. Lab., Lafayette, Indiana														
N.C. Reg. Poultry, Ind.	-----	Fla.	WL	PS	Reg. Cornell Contr.	4	4	4	3	4	4	4	2	3
N.C. Reg. Poultry, Ind.	-----	Mo.-C.	WL	PS	Reg. Cornell Contr.	4	4	4	3	4	4	4	2	2
N.C. Reg. Poultry, Ind.	-----	Mo.-F.	WL	PS	Reg. Cornell Contr.	3	4	3	2	4	4	3	2	4
N.C. Reg. Poultry, Ind.	-----	Tenn.	WL	PS	Reg. Cornell Contr.	4	4	4	4	4	4	4	2	3
N.C. Reg. Poultry, Ind.	-----	Texas	WL	PS	Reg. Cornell Contr.	4	4	3	3	4	4	4	2	4
Parks Poultry Farm, Altoona, Pennsylvania	-----													
Parks, Pa.	-----	Mo.-C.	WL	SX	Keystone B-1	3	4	4	2	4	4	3	3	2
Parks, Pa.	-----	Mo.-F.	WL	SX	Keystone B-1	2	2	3	3	2	2	2	2	2
Parks, Pa.	-----	N.J.	WL	SX	Keystone B-1	4	3	2	2	1	1	4	2	1
Parks, Pa.	-----	N.C.	WL	SX	Keystone B-1	1	2	3	1	3	2	3	2	4
Parks, Pa.	-----	Pa.	WL	SX	Keystone B-1	1	1	1	1	3	3	3	3	3
Parks Poultry Farm, Altoona, Pennsylvania	-----													
Parks, Pa.	-----	Pa.	WL	SX	Keystone B-12	3	4	3	3	4	4	4	4	2
Parks Poultry Farm, Altoona, Pennsylvania	-----													
Keystone, Pa.	-----	Pa.	WL	INX	Keystone K-1710	3	4	3	4	3	3	3	3	2
Parks Poultry Farm, Altoona, Pennsylvania	-----													
Parks, Pa.	-----	Mo.-F.	RIR x WPR BX		Sil-Go-Links	4	3	2	4	2	2	4	2	3
Parks, Pa.	-----	Pa.	RIR x WPR BX		Sil-Go-Links	4	4	3	4	1	1	2	2	3
Raynor's Poultry Br. Farm, Charlottetown, Prince Edwards Island	-----													
Raynor's, P.E.I.	-----	C.C.	WL	SX	Raynor 67	4	4	4	3	4	4	3	3	3
Rice Hatchery, Clinton, Missouri	-----													
Rice, Mo.	-----	Mo.-F.	WL	SX	Rice Line R-37	3	3	2	2	3	3	2	2	2
St. Augustin Coop. Hatchery, St. Augustin, Quebec	-----													
Couvoir St. Augustin, Que.	-----	C.C.	WL	SX	Corvette A-1	3	2	1	1	4	3	3	3	1

Table 5.--Range group ranking for stock entered in 1967-68 random sample egg production tests--Continued

ENTRY IDENTIFICATION	TEST	BREEDING	STRAIN OR TRADENAME	INCOME OVER FEED COST (No.)	AGE AT 50% PRO- DUCTION (Days)	GROWING MORTALITY (%)	LAYING MORTALITY (%)	EGG WEIGHT (oz)	LARGE EGGS (%)	FEED PER EGG (lbs)	ALBUMEN QUALITY (H.U.)	BLOOD SPOTS (%)
Shaver Poultry Breeding Farm, Galt, Ontario												
Shaver, Ont. (Swift, Man.)	C.C.	WL	SX	Starcross 288 ----- 1	3	2	3	1	1	1	3	1
Shaver, Ont. (Delta, Fla.)	Fla.	WL	SX	Starcross 288 ----- 1	2	1	1	1	1	2	3	2
Shaver, Ont. (Silver Lake, Minn.)	Minn.	WL	SX	Starcross 288 ----- 2	4	3	2	2	1	2	2	1
Shaver, Ont.	Mo.-F.	WL	SX	Starcross 288 ----- 1	3	1	1	2	1	1	2	1
Shaver, Ont.	N.B.	WL	SX	Starcross 288 ----- 1	2	1	2	3	2	1	2	2
Shaver, Ont.	N.J.	WL	SX	Starcross 288 ----- 1	1	3	2	1	1	1	4	4
Shaver, Ont. (Mid-Valley, Va.)	N.C.	WL	SX	Starcross 288 ----- 1	2	4	3	2	1	1	3	2
Shaver, Ont.	Pa.	WL	SX	Starcross 288 ----- 1	3	3	2	2	2	2	3	1
Shaver, Ont.	Tenn.	WL	SX	Starcross 288 ----- 2	3	3	4	1	2	1	2	1
Shaver, Ont.	Texas	WL	SX	Starcross 288 ----- 1	2	1	3	1	1	2	3	1
Shaver Poultry Breeding Farm, Galt, Ontario												
Shaver, Ont.	N.B.	RIR	SX	Starcross 555 ----- 3	4	4	2	2	3	2	4	1
Starline Breeders Hatchery, Saskatoon, Saskatchewan												
Starline, Sask.	C.C.	CGx WL	BX	Pearlette ----- 2	1	2	1	2	2	3	3	2
Starline, Sask.	Tenn.	CGx WL	BX	Pearlette ----- 3	3	2	3	2	2	3	3	2
Steuer Hatchery, Huntingdon, Pennsylvania												
Garrison, N.J.	N.J.	WL	SX	Steuer SC-300 ----- 2	3	4	1	2	2	3	3	3
Stone's Poultry Farm, Dinuba, California												
Pratt's, Ariz.	Ariz.	WL	SX	Stone H 56 ----- 4	4	4	3	4	4	4	3	1
Stone's, Calif. (Napier's, B.C.)	B.C.	WL	SX	Stone H 56 ----- 4	4	1	4	1	1	4	2	2
Stone's, Calif. (Hoover, Iowa)	Minn.	WL	SX	Stone H 56 ----- 2	3	2	2	4	3	3	2	2
Stone's, Calif.	Mo.-C.	WL	SX	Stone H 56 ----- 2	2	2	3	3	3	2	1	1
Stone's, Calif.	Mo.-F.	WL	SX	Stone H 56 ----- 3	4	3	1	4	3	3	1	1
Stone's, Calif. (Underwood, Ga.)	N.C.	WL	SX	Stone H 56 ----- 1	2	1	4	2	4	2	2	2
Metz, Pa.	Pa.	WL	SX	Stone H 56 ----- 2	2	1	2	4	4	2	2	1
Stone's, Calif.	Texas	WL	SX	Stone H 56 ----- 4	4	3	4	3	3	4	2	1
Sturtevant Farms, Inc., Halifax, Massachusetts												
Sturtevant, Mass.	N.H.	RIR x BPR	BX	Black Sex Link ----- 2	3	1	1	2	2	4	3	2
Sturtevant, Mass.	N.C.	RIR x BPR	BX	Black Sex Link ----- 4	3	4	2	1	1	4	3	2

Table 5.--Range group ranking for stock entered in 1967-68 random sample egg production tests--Continued

ENTRY IDENTIFICATION		TEST	BREEDING	STRAIN OR TRADENAME	INCOME OVER FEED AND CHICK COST (\$)	EGG PRO- DUCTION (Hens housed)	AGE AT 50% PRO- DUCTION (Days)	GROWING MORTALITY (%)	LAYING MORTALITY (%)	EGG WEIGHT (oz)	LARGE AND EXTRA LARGE EGGS (%)	FEED PER EGG (lbs)	ALBUMEN QUALITY (H.U.)	BLOOD SPOTS (%)
Sturtevant Farms, Inc., Halifax, Massachusetts														
Sturtevant, Mass.-----				N.H.	RIR	PS	Sturtevant Red-----	3	4	4	3	4	3	4
Sykes, F & G, Ltd., Warminster, Wiltshire, England														
Sykes, Eng.-----				Mo.-F.	WLxRIR	BX	Sykes Hybrid 3 -----	3	2	1	3	4	3	2
Triska, Eric, Edmonton, Alberta														
Triska, Alta.-----				C.C.	WL	SX	Belmont 292-----	4	4	3	3	3	2	3
Warren, J.J., Inc., North Brookfield, Massa- chusetts														
Warren, Mass. (Swift, Minn.)-----				Minn.	RIR x RIW	BX	Sex-Sal-Link-F-----	3	3	1	1	1	3	1
Warren, Mass.-----				Mo.-C.	RIR x RIW	BX	Sex-Sal-Link-F-----	3	3	1	2	1	3	2
Warren, Mass.-----				N.H.	RIR x RIW	BX	Sex-Sal-Link-F-----	2	3	1	2	2	2	2
Warren, Mass.-----				Pa.	RIR x RIW	BX	Sex-Sal-Link-F-----	2	3	4	1	1	3	2
Welp's Breeding Farm, Bancroft, Iowa														
Welp's, Iowa (Tampa, Fla.)-----				Fla.	WL	SX	Welpine 937 -----	2	3	2	1	3	2	3
Welp's, Iowa-----				Minn.	WL	SX	Welpine 937 -----	1	1	2	2	4	2	2
Welp's, Iowa (M.F.A., Mo.)-----				Mo.-F.	WL	SX	Welpine 937 -----	2	3	2	3	2	2	3
Welp's, Iowa (Smith, Ga.)-----				N.C.	WL	SX	Welpine 937 -----	3	4	3	1	3	2	3
Welp's, Iowa-----				Tenn.	WL	SX	Welpine 937 -----	1	1	3	1	3	1	2
Welp's, Iowa-----				Texas	WL	SX	Welpine 937 -----	1	1	4	2	3	1	2

RANDOM SAMPLE EGG PRODUCTION TEST ENTRIES AND CONDITIONS, 1967-68

Table 6. --Stock entered in 1967-68 tests

Breeder	Stock		Number of entries	Tests entered														
	Code	Strain or trade name		Ariz.	B.C.	C.C.	Fla.	Minn.	Mo.C.	Mo.F.	N.B.	N.H.	N.J.	N.C.	Pa.	Tenn.	Texas	
Andrews	602	Andrews B-31	1			X												
Animal Res. Inst.	570	Kentville R. B. C.	3		X	X				X		X		X	X			
Anthony	10	Anthony Leghorn	5															
Babcock	307	Babcock B-300	13		X	X	X	X		X	X	X	X	X	X	X	X	
Babcock	376	Babcock B-310	1						X									
Babcock	377	Babcock B-390	4							X	X	X		X				
Breder	230	Breder Moneymaker	3					X		X								
Burling	361	Golden Tri-Cross	1											X	X			
Cameron	283	Cameron 924	3							X				X	X			
Carey	397	Carey New Spots	3							X				X	X			
Cashman	304	Cashman Astronauts	2						X	X								
Cashman	31	Cashman Hi-Cash	7				X		X	X		X	X	X	X			
Clark	508	Clarks Paymaster 101	1			X												
Colonial	289	True Line 365 B	6				X		X	X		X	X	X				
Colonial	392	True Line 365 H	4					X		X					X	X	X	
Davis	309	Davis Combiner	3							X		X						
Davis	399	Davis Red	4					X		X			X		X			
Demler	371	Demler D-65	4		X					X		X						
deZeeuw	514	deZeeuw 752	1			X												
Erath	402	Erath Chicana	1														X	
Fisher	604	Fisher 105	2															
Garber	66	Garber G200	7		X			X		X				X	X		X	
Garber	65	Garber GX291	4					X					X	X	X			
Garrison	69	Golden Sex Link	2											X	X			
Ghostley	338	Ghostley Pearl 63	4					X					X		X		X	
Ghostley	373	Ghostley Cage Queen	1															
Hansen	80	Criss Cross H-25	1							X								
Harco	225	Harco Sex Link	4							X		X		X				
Hardy	86	Delux Sex Link	1									X						
Heisdorf & Nelson	88	H & N Nick Chick	2				X							X				
Honegger	92	Honegger Layer	6		X	X				X		X	X	X	X			
Hubbard	378	Hubbard Golden Comet	3									X	X		X			

Table 6. --Stock entered in 1967-68 tests-- Continued

Breeder	Stock		Number of entries	Tests entered													
	Code	Strain or trade name		Ariz.	B.C.	C.C.	Fla.	Minn.	Mo.C.	Mo.F.	N.B.	N.H.	N.J.	N.C.	Pa.	Tenn.	Texas
Hy-Line	96	Hy-Line 934	4	X						X			X			X	
Hy-Line	385	Hy-Line 934 E	5	X						X			X			X	X
Hy-Line	388	Hy-Line 938	8					X		X			X			X	XX
Ideal	356	Ideal 236	7							X			X			X	X
Ind. Farm Bur.	152	Princess 55	4							X			X			X	
Ind. Farm Bur.	234	Duchess 60	1														
Kimber	110	Kimber K-137	6	X			X					X	X		X	X	
Kimber	111	Kimber K-141	4			X				X			X		X	X	
Kimber	112	Kimber K-155	2	X						X							
Lawton	117	Buff Sex Link	4						X	X		X			X		
Mettling	389	Mettling Cay-Lyne	1					X									
Nelson	598	Nelson Sex Link	2								X						
No. Cen. Reg. Lab.	37	Reg. Cornell Control	5			X			X	X						X	X
Parks	352	Parks Keystone B-1	5						X	X		X			X		
Parks	398	Parks Keystone B-12	1														
Parks	396	Parks Keystone K-1710	1														
Parks	382	Parks Sil-Go-Links	2							X					X		
Raynor	603	Raynor 67	1														
Rice	403	Rice Line R-37	1						X								
St. Augustin	566	Corvette A-1	1						X								
Shaver	181	Shaver Starcross 288	10														
Shaver	333	Shaver Starcross 555	1									X			X		
Starline	533	Starline Pearllette	2						X								
Stever	186	Stever SC-300	1														
Stone	190	Stone H-56	8	X		X				X			X		X		X
Sturtevant	336	Black Sex Link	2									X					
Sturtevant	400	Sturtevant Red	1									X					
Sykes	381	Sykes Hybrid 3	1														
Triska	556	Belmont 292	1														
Warren	305	Sex Sal Link F	4				X			X					X		
Welp	290	Welp Line 937	6					X							X		X

Table 7.--Management, rations, laying house environment,

Test	Hatched (1967)	Age at housing (days)	Length of test (days)	Ent- ries (num- ber)	Replications		Housing management			Sq. feet per bird
					Num- ber	Birds per rep.	Brooding	Rearing	Laying <u>1/</u>	
Arizona -----	6/6	150	500	5	1	50	Litter	Litter	Litter	2.0
					1	50	Litter	Litter	Cage-2	.7
					1	50	Litter	Litter	Cage-5	.6
Br. Columbia----	4/5	150	497	10	4	40	Litter	Litter	Cage-5	.4
Cent. Canada ----	4/4	147	497	15	2	70	Litter	Litter	Litter	2.7
Florida -----	8/5/66	150	550	12	4	50	Litter	Litter	Litter	2.9
Minnesota Cage --	4/7	150	496	13	2	75	Litter	Litter	Cage-3	.5
					1	50	Litter	Litter	Cage-3	.5
Minnesota Floor--	4/4	150	500	13	1	100	Litter	Litter	Litter-slat	2.0
Missouri Cage ---	8/13/66	150	560	15	3	80	Litter	Litter	Cage-8	.6
Missouri Floor --	3/5	150	497	31	3	50	Litter	Litter	Litter	1.9
New Brunswick--	3/28	150	492	8	2	75	Litter	Litter	Litter	2.3
	3/28	150	492	8	2	75	Litter	Litter	Litter	2.3
New Hampshire --	5/8	160	500	16	1	360	Litter	Range	Cage-6	.5
					1	112	Litter	Litter	Cage-2	.7
					1	70	Litter	Litter	Litter	2.0
New Jersey-----	3/28	150	500	12	1	25	Litter	Litter	Litter	4.0
					1	25	Litter	Litter	Cage-25	1.0
North Carolina---	3/24	150	500	20	2	50	Slats	Slats	Slats	1.0
					2	50	Litter-slat	Litter-slat	Litter-slat	1.5
					4	26	Litter-slat	Litter-slat	Cage-2	.6
Pennsylvania ----	4/24	150	500	30	3	25	Litter	Litter	Litter	3.4
Tennessee -----	3/30	147	500	16	2	15	Litter	Litter	Cage-1	.9
					2	30	Litter	Litter	Cage-2	.45
Texas -----	3/7	150	500	14	12	16	Litter	Litter	Cage-2	.6

1/ The numerals after the word "cage" refer to the number of birds per cage.

and vaccination provided by tests, 1967-68

Entries brooded inter- mingled	Min. oz./doz. for large eggs	Protein (percent)			Metab. energy <u>2/</u> (calories/pound)			MC/Cr. Prot. <u>3/</u>			Test
		Start	Grow	Lay	Start	Grow	Lay	Start	Grow	Lay	
Yes	--	21.5	18.0	17.5	1335	1225	1338	62.0	68.0	76.4	Arizona
No	24	19.9	15.6	17.2	----	----	----	----	----	----	Br. Columbia
No	24	22.3	16.1	17.0	1300	1208	1300	59.4	79.0	81.0	Cent. Canada
Yes	23	22.0	17.4	16.9	1340	1371	1313	60.9	78.8	77.7	Florida
Yes	23	21.5	15.4	17.1	<u>4/</u> 1256	<u>4/</u> 1257	<u>4/</u> 1260	58.4	81.6	73.7	Minnesota Cage
Yes	23	21.5	15.4	17.1	<u>4/</u> 1256	<u>4/</u> 1257	<u>4/</u> 1260	58.4	81.6	73.7	Minnesota Floor
Yes	--	20.7	16.2	17.1	1318	1261	1267	63.7	78.0	73.9	Missouri Cage
Yes	--	20.7	16.2	17.1	1318	1261	1281	63.7	78.0	75.3	Missouri Floor
Yes	24	20.7	14.9	15.7	1300	1330	1300	63.0	89.0	83.0	New Brunswick
Yes	24	20.7	14.9	15.6	1300	1330	1180	63.0	89.0	76.0	
Yes	23.5	20.9	16.0	18.5 to 15.5	1340	1319	1255 to 1337	64.0	82.0	72.0 to 81.0	New Hampshire
Yes	24	21.2	----	18.8	1227	----	1144	57.9	----	60.9	New Jersey
No	23	20.0	16.0	18.3 to 16.5	1249	1238	1303 to 1335	62.4	77.4	71.2 to 80.9	North Carolina
Yes	24	21.0	17.0	18.0	<u>4/</u> 1300	<u>4/</u> 1357	<u>4/</u> 1354	61.9	79.8	75.2	Pennsylvania
Yes	23	21.9	17.2	16.8	1333	1347	1271	60.7	78.4	75.9	Tennessee
Yes	24	21.5	17.5	17.5	<u>4/</u> 1264	<u>4/</u> 1324	<u>4/</u> 1376	58.8	75.7	78.6	Texas

2/ Metabolizable energy is the maximum quantity of feed energy that possibly may be used by the chicken.

3/ Metabolizable calories divided by percent crude protein.

4/ Approximate metabolizable energy computed from productive energy, using 70 percent as the conversion factor.

Table 7.--Management, rations, laying house environment,

Test	Lighting		Artificial heat used	R Value of insulation material <u>5</u> /		Ventilation
	Rearing (hours)	Laying (hours)				
Arizona -----	14	14	No	None		Slat house, natural
Br. Columbia ---	10	16	No	Ceiling 15.5 Walls 9.4		Natural via windows
Cent. Canada----	(<u>6</u> /)	(<u>7</u> /)	Yes	Ceiling 27.9 Walls 15.1		Exhaust fan in roof
Florida -----	Natural	14	No	None		Natural via windows
Minnesota Cage--	Natural	14 to 18	No	Ceiling 15.8 Walls 12.1		Positive pressure
Minnesota Floor -	Natural	14 to 16	No	Ceiling 15.0 Walls 13.0		Exhaust fans
Missouri Cage---	10	14	No	Ceiling 5.8 Walls None		Ridge vents
Missouri Floor--	Natural	14	No	Ceiling 15.0 Walls 15.0		Exhaust fans in ceiling
New Brunswick --	14	14	Yes	Ceiling 13.8 Walls 11.4		Positive pressure
New Hampshire--	Natural	14	---	-----		-----
New Jersey -----	Natural	14	Yes	Ceiling 1.9 Walls 2.4		Exhaust fans
North Carolina---	Step down.	Step up to 17	No	Ceiling 7.3 Walls 1.5		Natural via windows
Pennsylvania ----	Natural	14	Yes	-----		Natural via windows
Tennessee -----	Natural	Natural <u>8</u> /	No	Half of house at 4.0 and half at 13.0.		Winter, positive pressure; summer, exhaust fans.
Texas -----	Natural	15	No	None		Natural via windows

5/ Due to variations in type of construction, R Values will be approximate for some tests.

6/ At day old--18-1/2 hr.; light decreased 15 minutes per wk. to meet at 15-1/2 hr. at longest day, then natural decrease until 13-1/2 hr.

New Castle		Infectious bronchitis		Fowl Pox		Laryngo- trachitis		Encephalo- myelitis		Coccidiosis control		Test
Type	Age (wk.)	Type	Age (wk.)	Type	Age (wk.)	Type	Age (wk.)	Type	Age (wk.)	Type	Age (wk.)	
Occular Water	4 16	Occular Water	4 16	Wing web.	8	None	--	None	--	Unistat	1-20	Arizona
Nasal Spray Spray	1 3 14	Spray Spray	3 14	None	--	None	--	Water Water	12 20	Amprol	0-20	Br. Columbia
Spray Spray	2 25	Spray Spray	2 12	Wing web.	8	Vent	8	Water Water	10 17	Amprol	0-8	Cent. Canada
Water Water Water	1,3,10 16,32 48,64	Water Water	1,3 10,16	Wing web.	8	None	--	None	--	Cocci-Vac	2	Florida
Water Water	5 14	Water Water	5 14	Wing web.	9	None	--	None	--	Cocci-Vac Tri Thy Adol	1 0-8	Minnesota Cage
Water Water	5 14	Water Water	5 14	Wing web.	9	None	--	None	--	Cocci-Vac Tri Thy Adol	1 0-8	Minnesota Floor
Water Water Water	1 6 14	Water Water Water	1 6 14	Wing web.	8	Occular	8	None	--	Cocci-Vac	1	Missouri Cage
Water Water Water	1 6 14	Water Water Water	1 6 14	Wing web.	8	Occular	8	None	--	Cocci-Vac	1	Missouri Floor
None	--	Water	2 16	None	--	None	--	None	--	Zoamix	1-18	New Brunswick
Dust Dust	2 20	Dust Dust	2 20	None	--	None	--	None	--	Cocci-Vac	.5	New Hamp- shire
Water Water	4 16	Water	14	Feather follicle	14	Occular Occular	4 14	None	--	Amprol	8	New Jersey
Water Water Water	1 5 17	Water Water Water	1 5 17	Wing web.	14	None	--	Water	20	None (slats) Cocci-Vac Trithiodol	-- 1 1-9	North Carolina
Water Water Water	4 8 16	Water Water Water	4 8 16	None	--	None	--	None	--	None	--	Pennsyl- vania
Occular Occular Occular	1 day 10 20	Occular Occular Occular	1 day 10 20	Wing web.	20	None	--	None	--	Amprol	0-20	Tennessee
Mod. live Mod. live Mod. live	.5 4 21	Mod. live Virulent	4 13	Wing web.	8	None	--	None	--	Sulfa- quinoxaline.	0-13	Texas

7/ 13-1/2 hr. until natural increase takes light hours to 15-1/2 hr. in mid-June, then light held at 15-1/2 hr. until end of test.

8/ 14 hr. per day until 10 mo.; thereafter increase 15 minutes per week.

Tests and Supervisors

Arizona Random Sample Test

Ernest L. Parker, Arizona State University, Tempe, Ariz. 85281

British Columbia Random Sample Egg Production Test, Abbotsford

C. W. Wood, British Columbia Department of Agriculture, Abbotsford, B. C., Canada

Central Random Sample Egg Production Test

M. S. Mitchell, Poultry Production Section, Canada Department of Agriculture, Ottawa, Ontario, Canada

Florida Random Sample Test

A. W. O'Steen, Chipley, Fla. 32428

Minnesota Random Sample Egg Production Test

Robert E. Moehrle, Department of Agriculture, Division of Poultry Industries, 430 State Office Building, St. Paul, Minn. 55101

Missouri Random Sample Egg Production Test (Cage)

Charles W. McElyea, P. O. Box 109, Mountain Grove, Mo. 65711

Missouri Random Sample Egg Production Test (Floor)

Charles W. McElyea, P. O. Box 109, Mountain Grove, Mo. 65711

New Brunswick Random Sample Egg Production Test

Bernard R. Bartlett, Department of Agriculture, Fredericton, N. B., Canada

New Hampshire Multiple Unit Egg Production Test

W. C. Skoglund, Department of Poultry Science, University of New Hampshire, Durham, N. H. 03824

New Jersey Random Sample Egg Laying Test

John J. Dowling, Jr., Rutgers University, New Brunswick, N. J. 08903

North Carolina Random Sample Egg Laying Test, Salisbury

G. A. Martin, Poultry Extension Department, North Carolina State University, Raleigh, N. C. 27607

Pennsylvania Random Sample Laying Test

Paul J. Turek, Pennsylvania Furnace, Pa. 16865

Tennessee Random Sample Laying Test

O. E. Goff, Poultry Department, University of Tennessee, Knoxville, Tenn. 37916

Texas Random Sample Egg Production Test

Bill H. Doran, Texas A & M University, College Station, Tex. 77843





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AGRICULTURAL RESEARCH SERVICE
BELTSVILLE, MARYLAND 20705

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